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# The environmental and social impacts of ebanking

## A case study with Barclays PLC

### Final Report, April 2003

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# 1. Readers Guide

The following report presents the calculations and findings as well as the resulting recommendations from the Barclays Plc case study within the Digital Europe project.

Chapter 2 gives the background to the case study; chapter 3 investigates the environmental aspects; and chapter 4 highlights social aspects of different banking scenarios. Chapter 5 outlines future scenarios in the sector and chapter 6 finally makes recommendations for business and government.

The following table outlines the content of chapter 3 in more detail.

*Table 1-1: The structure of Chapter 3 and 4.*

| Chapter | Description of content |
|---|---|
| 3.1 | Introduces the research objectives and research methodology. |
| 3.2 | Introduces the two scenarios being considered, the system and its boundaries under investigation. |
| 3.3 | Presents material intensity calculations. |
| 3.4 | Summarizes the results for each scenario. |
| 3.5 | Discusses the findings in chapter 3.3 and 3.4 and draws conclusions. |

# 2. Background

Chapter 2 introduces the background of the case study and the project.

Online banking is one of the most frequently used applications of digital services today. Individuals and business customers use it to transfer money and check bank accounts. There are potential environmental and financial benefits to be delivered by online banking: electronic banking makes not only the journey to the bank obsolete, but reduces the amount of paper-based documents and banking office space used. Therefore, costs per transfer by the internet are far cheaper than with traditional transfers. However, these potential financial savings might be countered by (additional) processes and requirements, such as the need for Information Communication Technology (ICT) hard- and software or the potential increase in private mobility due to the time savings (rebound effect). The question of to what extent online banking is more environmentally beneficial than traditional methods will be the focus of this case study.

## *2.1 Digital Europe: Ebusiness and Sustainable Development*

*Digital Europe: Ebusiness and Sustainable Development* (henceforth referred to as *Digital Europe*) is the first comprehensive analysis of the relationship between ebusiness and sustainable development in Europe. The project is rooted in a unique partnership between three leading sustainable development research organisations, leading European companies in the ebusiness sector, and regional bodies from across the EU. It draws on the knowledge and expertise of a range of member states and EU policymakers. In doing so, *Digital Europe* focuses on the current realities of ebusiness in Europe in order to identify opportunities for ebusiness to contribute more effectively to sustainable development and the implications of this for key stakeholders.

## *2.2 The Barclays Plc Case Study*

The case study with Barclays Plc (throughout the report referred to as Barclays) compares the environmental impact of online banking with traditional banking. An assessment will be made of the material intensity of the following two scenarios:

1. ‘Traditional banking’ scenario
   A bill payment is made by filling out a (paper) credit slip that is brought to the bank branch. There, the information on the slip is keyed into the banks computer system and further processed. A more detailed description is given in chapter 3.2.2.

2. ‘Online banking’ scenario
   In the online banking scenario the customer uses a PC to access Barclays online banking services in order to transfer the money. More details are presented in chapter 3.2.3.

These scenarios have been chosen due to their direct comparability (see section 3.1.3). When drawing conclusions from this case study, this comparison will be used as a proxy for comparisons between on-line and face-to-face banking transactions more generally.

# 3. The Environmental Dimension of Banking

## *3.1 Objectives and Methodology*

This chapter introduces the objectives and the methodology used when assessing the environmental dimension of banking, using the example of paying a bill.

### 3.1.1 Objectives

The case study is designed to correspond with the project's objective of assessing the environmental impacts of ebusiness, specifically focusing on the potential environmental effects of online banking. Within the case study, the Wuppertal Institute, in close cooperation with Barclays, aims to:

- look at consumer behaviour with respect to the use of online banking;
- assess the environmental impact of traditional and online banking in terms of the material intensity throughout the life-cycle with respect to
  - material flows,
  - transport intensity,

  by applying the MIPS concept;
- create different scenarios to estimate the potential environmental impacts from different methods of banking (traditional vs. online) over the next 3 to 5 years, based on the assessment's findings;
- to identify and highlight potential improvements to reduce environmental impacts within the banking sector and
- on a more strategic level, to highlight the potential of different product or service distribution strategies to increase resource efficiency, by drawing conclusions and making recommendations for industry and government on how to utilize the new digital products and services to create a more sustainable future.

### 3.1.2 Underlying Methodology – the MIPS Concept

In 1997, Weizsäcker, Lovins and Lovins introduced the 'Factor Four' concept with the publication of their book *Factor Four: Doubling Wealth, Halving Resource Use*. The 'Factor 4' concept states that global eco-efficiency needs to increase fourfold. In essence, this means quadrupling resource productivity, or, in other words, the amount of benefit from each unit of natural resource used[1]. On the basis of per capita consumption being about five times higher in OECD countries than in developing countries, Schmidt-Bleek has proposed that the material intensity in OECD countries should be reduced by a factor of ten[2]. The 'Factor 10' target addresses the absolute amount of natural resources used, as opposed to 'Factor 4' which addresses the ratio of eco-efficiency[1].

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[1] EEA. (1999). *Making sustainability accountable: Eco-efficiency, resource productivity and innovation* . Topic report No 11/1999. European Environment Agency.
For further details on the factor 4/10 the reader is referred to: Weizsäcker, E. von., Lovins, A.B. & Lovins, L.H. (1997). *Factor Four. Doubling Wealth, Halving Resource Use*. Earthscan, London.

[2] Weizsäcker, E. von., Lovins, A.B. & Lovins, L.H. (1997). *Factor Four. Doubling Wealth, Halving Resource Use* . Earthscan, London.

Schmidt-Bleek has developed a methodology called MIPS to calculate the **M**aterial **I**nput **P**er **S**ervice unit (MIPS)[3] which he proposes as the unit of output for Factor 4/10. MIPS is defined as the amount of material that must be moved on a 'cradle-to-grave' basis (in other words the material flows) for any given good or service. By associating the material fluxes connected to energy generation, it integrates energy intensity as well. The concept of MIPS is based on the idea that it is the service provided by a certain good that is of interest to the user of that good, i.e. as opposed to the good itself.

MIPS can be used as a tool to facilitate eco-efficiency improvements in the design process of goods and infrastructure. As a measurement for the material intensity per service unit, MIPS can be illustrated as a fraction:

$$\frac{\text{Resource consumption (Material intensity or input)}}{\text{Service provided (Service unit)}}$$

Following the MIPS methodology, 'resources' removed from their environment[4] to provide an economic service can be divided into three categories: energy use; the necessary tangible mass; the use or distortion of the earth's surface. Based on this scheme, MIPS differentiates five input categories:

- Abiotic raw materials, like mineral raw materials, fossil fuels, excavation residues;
- Biotic raw materials, like animal and plant biomass from farmed and non farmed areas;
- Soil movements (in agricultures and forestry), e.g. soil cultivation, erosion;
- Water, e.g. surface water, ground water;
- Air (compounds), e.g. combustion, chemical synthesis.

"Biotic raw materials", "soil movements" and "air compounds are of rather low importance for the Barclays case study, which is why the latter two won't even be displayed in the results. The sum of all material inputs required to provide one service unit represents its material intensity. The sum of abiotic and biotic raw materials + soil movements is called **total material requirement** (TMR). TMR is a statistical figure which is used among others to characterise the resource consumption at a macro economic level e.g. by the European Environmental Agency or EUROSTAT[5]. The part of the material turnover - measured in tonnes, kilograms or grams - that does not enter the product itself, is commonly called its **ecological rucksack**. The comparability of material inputs for different products and services is not given until they are related to one comparable unit: the 'service unit'. Introducing this 'comparison unit' is necessary, since similar products or

***Example***

A golden ring of about 10 g carries an invisible ecological backpack of 10 x 540,000 g, or more than 5 tonnes.

[3] Schmidt-Bleek, F. (1993). *MIPS- Revisited*. Fresenius Environmental Bulletin, 2, 407-412.

[4] Material movements are accounted for as soon as they pass the threshold between Ecosphere and Technosphere. At the INPUT side it passes this threshold as soon as materials are actively extracted or moved with technical means. At the OUTPUT side materials leave the Technosphere when they are translocated into a natural environment (e.g. emissions into a river) (Schmidt-Bleek et al., 1998, p. 36).

[5] TMR will be the unit used in this case study for the comparison of material intensities.

services often do not yield the same use; e.g. their life-span might be different. These differences (in this case traditional versus online bill payment) will be the focal point of this study.

Further defining a service unit allows us to take into consideration the fact that true ecological cost is dependent on the lifetime of the product or service. Depending on the number of uses a product yields, the material intensity will grow or shrink[6]. One example for a service unit comparing modes of transportation is 'person kilometres' for people or 'tonne kilometres' for freight.

MI (material intensity) factors – the factor by which the respective amount of materials used to produce the product or service needs to be multiplied to calculate the material intensity - range from 1.2 for natural gas, seven for steel, eight for PVC, 85 for aluminium, 1409 for nickel, and up to 540,000 for gold[7]. Not only is it possible to calculate the material intensity for end products, it is also possible to separately calculate for sub-components. Compared to full LCAs (life-cycle analyses) the main advantage of MIPS is that results can be generated relatively fast. Covering the main inputs of the system under investigation, MIPS allows a comparison of different alternatives and can serve as a support tool for decision-making or as a basis for more detailed and sophisticated (LCA-) studies[8].

### 3.1.3 Service Unit

Section 3.1.2 explained the basic function of the service unit. Due to its key position within the MIPS concept, the definition of the service unit is a crucial step in the analysis. It decides the data requirements as well as the applicability of the results. When defining the service unit it is important to make sure that:

a. the unit allows comparison of many different product or service alternatives. Hence it should be phrased in a generic way;

b. the unit reflects all important usage aspects of the product/service;

c. the measure of the unit is understandable and applicable for a broad audience.

Personal customers visit bank branches in order to deposit cash or cheques, withdraw cash, transfer money, buy or sell foreign currencies, purchase other bank services (e.g. loans) or seek advice. Taking counter transactions as a measure, the most prevalent money transmission service in the UK with 28 per cent were bill payments, followed by personal cheque credits (21 per cent) according to a study by McKinsey[9]. It is assumed that, for online banking, the percentage would be even higher, since some counter services such as the withdrawal of cash, or sale of foreign currencies etc are not available online. Therefore, the service unit will be defined as follows:

---

[6] Unless the material consumption per service unit in the use phase is higher than the one in the production and end-of-life stage.

[7] There is a database for different raw materials, electricity and transport available at the Wuppertal Institute. A part of the database is accessible online at http://www.wupperinst.org/Projekte/mipsonline/download/MIWerte.pdf (German only).

[8] Rautenstrauch, C. (1999). *Betriebliche Umweltinformationssysteme* [environmental information systems for business]. Berlin, Heidelberg: Springer, p. 52.

[9] BB, 22 March 2002. Visit of WI staff at Barclays Plc headquarter in London.

Service unit: payment of a single personal bill to a specified receiving account.

## *3.2 Setting the System Boundaries*

This chapter outlines and describes the processes involved in each of the scenarios. In doing so, the system boundaries for the analysis are given as well. An in-depth description of figures and data on the process steps is presented in chapter 3.3.

### 3.2.1 Scoping

This study will look at the different forms of bill payment in accordance with the methodology given in the previous sections. In doing so it has been assumed that the traditional banking methods and online transfers are equivalent (i.e. not different kinds of services like 24 hour banking or personal banking). Otherwise the traditional banking scenario would not be an equal substitute to the other scenario and a comparison would be not possible.

Figure 3-1 presents a generic and simplified outline of the payment of one bill, applicable to both scenarios: 'traditional banking' and 'online banking'.

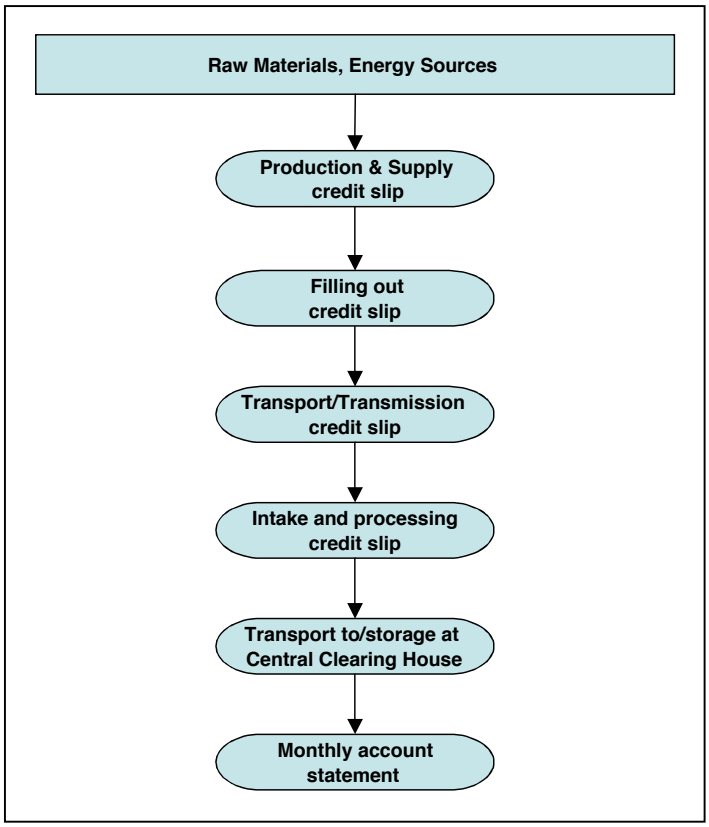


*Figure 3-1: Generic process flowchart.*

Processes undertaken by the customer (filling in the credit slip and cheque as well as forwarding them to the bank) and by the customer's bank (intake and collection of payments, data processing, data storage and sending of a monthly statement to customer) are within the scope of this study. The geographical scope of this study is the UK.

To ensure the comparability of the results and to keep the study focused, the following aspects will be outside its scope:

- Material intensities of aspects that are not central to the scenarios, such as the production of vehicles, the transport infrastructure, the development of software for the online banking etc.;
- Other methods of payment (e.g. direct debits or online payments via WAP);
- Disposal/recycling of paper slips or account statements. Rough estimations of the material intensity of various waste treatment or recycling techniques show that they usually add at the most about 1 tonne of TMR[10] per tonne of waste. Since only credit slips and account statements with a weight of a few grams need to be considered, this final step can be overlooked;
- The indirect effects of the money, which depend upon what the money is used for (e.g. purchase of energy saving technology or petrol).

### 3.2.2 Traditional Banking Scenario

The process steps involved in paying a bill in the traditional banking scenario are illustrated in the process diagram below. It reflects the structure of the process diagram given for the general banking process diagram (Figure 3-1), but further elaborates it according to the specifics of the scenario.

[10] TMR = Total Material Requirement - the sum of abiotic and biotic raw materials + soil movements. TMR is a statistical figure which is used to characterise the resource consumption on macro-economic level e.g. by the European Environmental Agency or EUROSTAT.

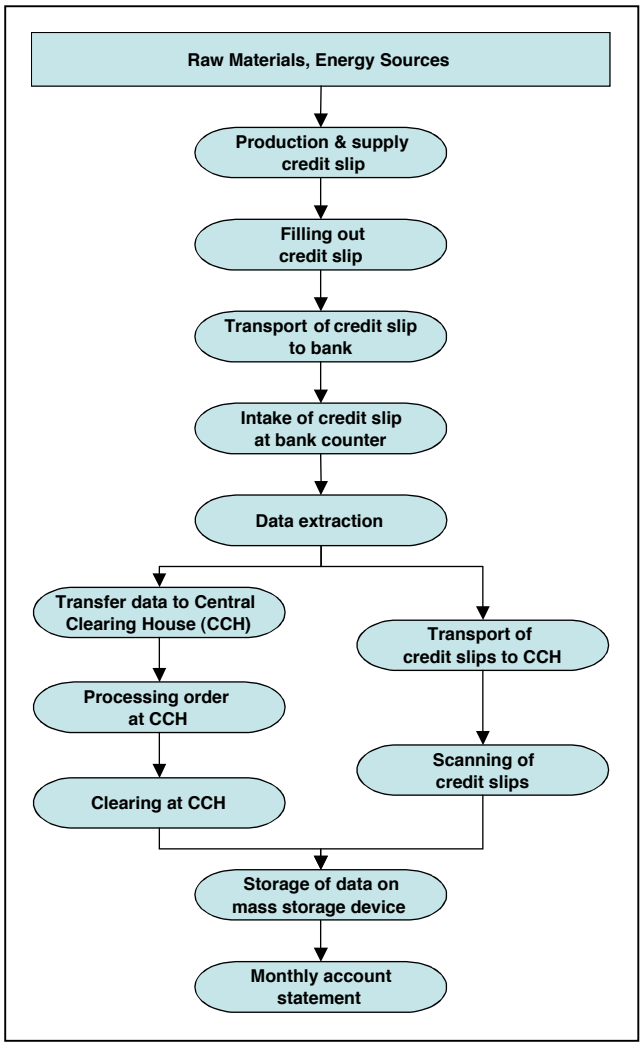


*Figure 3-2:Process flowchart for the traditional banking scenario.*

The following provides a short description of the processes included in the analysis:

Credit slips are either sent to the customer by the billing company attached to bills and cheque books, or as blank forms by the bank. The transport of the slips to the customer will be outside the scope of this study, because the bill would be posted to the customer in any case, regardless of the chosen method of payment [11] [12]. The process of filling in the slips and cheques is from a material intensity point of view negligible, since it involves only a pen. Hence it is not further considered in the study.

Credit slips and cheques are then transported to the bank by the customer and received at a counter. Details of each payment are keyed into the computer by the counter staff whilst the customer waits at the till. Cheques are digitised in the back office of each branch; branches are equipped with several electronic document handlers just for this purpose. The digitised information is then sent to the central clearing house (CCH) of Barclays, where the payments are processed and the cheques cleared. Finally, the information and data used are backed up on a server or other mass storage device. Material intensities of the bank infrastructure are included (Barclays buildings, including the buildings' technological services (e.g. heating

[11] BB, 22 March 2002.

[12] BB, 29 July 2002. Email from Phil Case to Michael Kuhndt.

system, electric mains system) as is the consumption of electricity, gas and water. A distinction between infrastructure related to traditional banking and online banking is incorporated in the study.

Credit slips and cheques are not only transferred digitally, but also physically by a light truck. The clearing system involves physical transportation of paper vouchers (cheques and credit slips) from each bank branch at which they are deposited (anywhere in UK), ultimately to Barclays National Records Centre in Northampton for storage for a period of 6 years. At the end of this period, they are removed by a waste management company for recycling. For documentation reasons all paper vouchers are scanned in Northampton and the files stored on a server.

An overview of the transfers from and to the account is given in the account statement, sent out for most customers on a monthly basis by post[13].

### 3.2.3 Online Banking Scenario

The process steps involved in paying a bill in the online banking scenario are illustrated in the process diagram below. It reflects the structure of the process diagram given for the general banking process diagram (Figure 3-1), but further adapts it according to the specifics of the scenario.

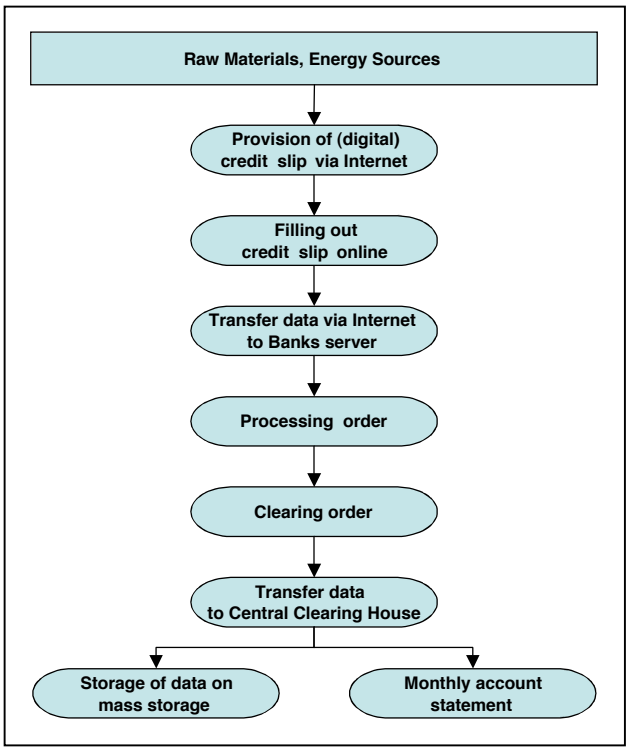


*Figure 3-3: Process flowchart of the online scenario.*

In the case of online banking, the customer is provided with a web-based "credit slip". Special software, other than a web-browser, is not required. The "credit slip" is filled in online and the information transferred via the internet to Barclays. The transport intensive clearing process described in the traditional banking scenario does not arise. Processing of the

[13] BB, 25 July 2002. Email from Phil Case to Michael Kuhndt.

information is similar to the traditional scenario. As is the information storage and the monthly account statement sent by post to the customer.

## *3.3 Data Inventory & Calculations*

Chapter 3.3 gives an overview of the data used in the material intensity analysis calculation and presents the results. A summarising result overview is given in chapter 3.4.

For each process step considered, the material intensity is expressed in kg abiotic- and biotic raw materials (summed up as total material requirement - TMR) and water usage, in accordance with the underlying methodology as presented in chapter 3.1.2.

### 3.3.1 Traditional Scenario

The process steps considered and described here are in accordance with the scoping of the scenario described in 3.2.2.

#### 3.3.1.1 Bank Infrastructure

When considering seemingly immaterial services, such as the transfer of money, building infrastructure can contribute a considerable degree to the overall material intensity. Barclays gross internal building area is 1,603,399 $m^2$ [14], to be divided by 2,084 buildings nation wide – including about 2,000 Barclays branches[15]. As already stated in scoping chapter, the calculation of the bank infrastructure includes Barclays total consumption of electricity, gas and water and thus, among other things, the energy consumed by IT appliances.

For allocating the respective share of the infrastructure and infrastructure related consumptions (e.g. electricity) on each bill payment (see service unit), the following assumptions are made:

- In 2000, 242 million counter transactions were made at Barclays, 28 per cent of them (67.8 million) being bill payments[16]. For reasons of simplicity, it is assumed that these counter transactions represent the entire business of Barclays and that each transaction constitutes an equal share of the material intensity of the buildings. The share of online payments is estimated to be ten per cent of the counter payments[17], adding another 6.8 million payments. The total amount of transactions is therefore 248.8 million (242m + 6.8m).
- The head office takes up about 30 per cent of the total building infrastructure. It is assumed that the related material intensity can be equally allocated on each of the 248.8 million transactions.
- The total floor space required for traditional banking is calculated by subtracting the space needed for online banking and for the head office from the total gross internal area.

[14] Barclays PLC. 2002. *Social and environmental report 2001*.

[15] BB, 22 March 2002.

[16] BB, 22 March 2002.

[17] BB, 21 November 2002. Telephone call between Phil Case and Volker Türk.

- The buildings' average life span is assumed to be 40 years, with restorations necessary from the 20th year onwards.

By dividing the total building area by the number of transactions per year, the material intensity is as follows:

***Box 3-1: Material intensity:***
***Bank infrastructure (traditional scenario)***

The scope includes the materials required for the building infrastructure + building services technology (e.g. heating system, electric installations). Key figures applied are:

- The life span of the building is 40 years
- Total number of transactions is 242 million per year
- Total building area is 1.1 million $m^2$
- Partial consumption by head-office is included

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.45 | kg |
| biotic raw materials | 0.08 | kg |
| water intensity | 1.83 | kg |
| TMR[18] | 0.52 | kg |

The total electricity consumption accounted for 304 million kWh, gas for 168.6 million kWh and water for 917,941 $m^3$ in 2001[19]. In order to calculate a single paper-based bill payments share of the total, electricity, gas and water consumption have been allocated equally over the total floor space. As described, this floor space was than allocated on the three "units" head office, traditional and online banking. Only the energy consumption for the online banking's information technology (IT) equipment is accounted for separately. Calculation results are:

[18] TMR = Total Material Requirement - the sum of abiotic and biotic raw materials + soil movements. TMR is a statistical figure which is used to characterise the resource consumption.

[19] Barclays PLC. 2002. *Social and environmental report 2001*.

***Box 3-2: Material intensity:***
***Banks electricity, gas, water (traditional scenario)***

Key assumptions that have been taken:

- Electricity consumption traditional banking: 212,598,934 kWh
- Gas consumption traditional banking 10,352,529 kg
- Water consumption traditional banking 641,926 $m^3$
- Total number of transactions traditional banking 242 million per year
- Partial consumption by head-office is included

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 2.06 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 86.09 | kg |
| TMR | 2.06 | kg |

***Box 3-3: Scenario:***
***Cutting electricity consumption by 25% (traditional scenario)***

In order to highlight some of the key-determinants in the case study, a few "scenario calculations" have been carried out. These calculations alter the value of one factor in order to stress either possible resource reduction opportunities or to underline the factors influence on the main result. The scenario's results are not used in the summarising overview in chapter 3.4.

This scenario hypothetically reduces the electricity consumption by 25%, while the consumption of gas, water and all other factors remain on the same level.

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 1.57 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 66.58 | kg |
| TMR | 1.57 | kg |

A comparison with the box above shows the resource reduction potential of such a measure.

### 3.3.1.2 Credit Slip & Account Statement

The credit slip necessary for one bill payment has a size of $^1/_4$ A4 paper sheet and is made from paper with a weight of 80 g/$m^2$. Ink for printing is not considered, since it is only a marginal resource use.

### *Box 3-4: Material intensity: Credit slip*

Key figures applied are:

- Size: $^1/_4$ A4 page
- Paper weight: 80 g/m$^2$

| | per transfer | |
|---|---|---|
| abiotic raw materials | 0.01 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 0.31 | kg |
| TMR | 0.01 | kg |

An account statement is sent from the Barclays computer centre in Gloucester to the customer by post, usually on a monthly basis. It is assumed that an average statement consists of two A4 pages (630 cm$^2$ each) plus a paper envelope. An envelope that holds two or three folded A4 sheets has a paper size (when unfolded) of about 600 cm$^2$, which is why it is calculated like an ordinary A4 sheet.

Again, the question of a single payment's share of the total material intensity arises. Including standing order and direct debit authorisations, a total of 300 transactions per account per year seems reasonable. Calculations based on these figures are presented below:

### *Box 3-5: Material intensity monthly account statement*

Key assumptions that have been made are:

- 3 A4 sheets with a weight of 80 g/m$^2$ are considered
- Account statements are sent out on a monthly basis
- Total number of transactions per year: 300

| | per transfer | |
|---|---|---|
| abiotic raw materials | 0.01 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 0.14 | kg |
| TMR | 0.01 | kg |

#### 3.3.1.3 Transport

Two transportation steps need to be considered: the transfer of the credit slip or cheque by the customer to the bank as well as the shipment of all slips/cheques to the central clearing place by Barclays. Cheque books as well as account statements are delivered by postal

service. A single bill payments share on the postal services material intensity is negligible and therefore not considered further.

The average distance travelled by customers to get to the bank is not known, but Barclays documents show that 95 per cent of the UK population are within two miles (3.2 km) of a branch. A total transport distance of five kilometres in both directions seems to be a reasonable assumption. According to estimations by Barclays, about 80 per cent of their customers visit the bank by car[20]. Most people will combine a bank visit with other activities, which is why only $^1/_3$ of customer trips will be accounted for by bill payments. Based on these figures, the material intensity of the customer's journey can be calculated as:

***Box 3-6: Material intensity: Customer trip***

Key figures applied are:

- Total trip length: 5 km
- Number of activities during the trip: 3
- Mode of transportation: private car

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.14 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 0.96 | kg |
| TMR | 0.14 | kg |

## *Transport by Barclays*

Barclays has about 2,000 branches in the UK, but only one clearing centre in Northampton[21]. The clearing system involves physical transportation of paper vouchers (cheques and credit slips) by light trucks from the bank branch where they have been received (anywhere in UK), to the clearing centre in Northampton. Each truck collects the vouchers from several branches on its way; for the purpose of this study, it is assumed that 15 branches are taken in on each journey. A crucial determinant of the share of a single bill payment on the total material intensity of this step is the question of how many transported 'items' need to be considered. In 2000, 242 million counter transactions were reported, 28 per cent of which were bill payments that resulted in the transportation of paper vouchers. In the absence of other information, it is assumed that 75 per cent of the total number of counter transactions resulted in paper vouchers or similar items requiring transportation.

[20] BB, 22 March 2002.

[21] BB, 22 March 2002.

***Box 3-7: Material intensity: Transportation by Barclays***

Key assumptions that have been taken are:

- Days of operation: 250
- Average trip distance: 500 km (312 miles) for both ways – in total more than 16.6 million km per year
- Number of light trucks needed: 133
- Total number of items transported per year: 181.5 million

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.02 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 0.11 | kg |
| TMR | 0.02 | kg |

A summarising overview of the traditional scenarios results is presented in chapter 3.4.

## 3.3.2 Online Banking Scenario

Apart from the banks and customers IT infrastructure, the banks building infrastructure and the monthly statement are covered in this scenario. The monthly statement does not differ from the one illustrated in 3.3.1.2, so that the calculation is not described again.

### 3.3.2.1 Bank Infrastructure

Even though online banking is done in cyberspace, the equipment necessary for processing is rooted in the real world. But it is not only the floor space for the equipment, but also for the people working with them, which needs to be accounted for. The following figures are used:

- Floor space for online banking specific IT equipment: 105 $m^2$
- Floor space for online banking staff: 1,000 $m^2$
- Head office is accounted for as depicted in chapter 3.3.1.1

This translates into a material intensity of:

***Box 3-8: Material intensity:***
***Bank infrastructure (online banking)***

The scope includes the materials required for the building infrastructure + building services technology (e.g. heating system, electric installations). Key figures applied are:

- The life span of the building is 40 years
- Total number of transfers is 6.8 million per year
- Total building area is (105 $m^2$ + 1,000 $m^2$) 1,105 $m^2$
- Partial consumption by head-office is included

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.14 | kg |
| biotic raw materials | 0.02 | kg |
| water intensity | 0.58 | kg |
| TMR | 0.17 | kg |

The next step is again to include the consumption of electricity, gas and water. Calculation results are:

***Box 3-9: Material intensity:***
***Banks electricity, gas, water (online banking)***

Key assumptions that have been taken:

- Electricity consumption traditional banking: 209,513 kWh per year
- Gas consumption traditional banking 10,202kg per year
- Water consumption traditional banking 633 $m^3$ per year
- Total number of transfers is 6.8 million per year
- Partial consumption by head-office is included

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.67 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 30.29 | kg |
| TMR | 0.67 | kg |

### 3.3.2.2 IT Infrastructure

This section encompasses both the customer's IT appliances (PC and monitor) and the internet infrastructure required to make the payment as well as the banks IT equipment.

One of the key processes of the MIPS concept is the measurement of the material intensity of a product or service, throughout the life-cycle. For home IT equipment, material intensity of the production- and use-phase are included in the analysis. When it comes to the entire internet infrastructure (server, router, cables etc.), estimations cover only the use-phase. Studies that attempt to quantify the material intensity required to produce or dispose of the appliances used in the entire internet system are not known. Therefore only the energy consumption during the use phase could be considered. Moreover, first estimations by the Wuppertal Institute suggest, that the internet devices material intensity during the production phase appears to be rather small for online banking.[22]. The equipments disposal stage is due to the lack of data not included. Experience with other products tells, that in the light of the life-cycle wide material flows this step is of limited significance. The time used for the online transfer is important as this determines the relative share of a single action on the equipment's total life time and hence on the overall material intensity. With a 56k modem it takes about three minutes to log on from the internet to the Barclays site and an additional two minutes to pay the bill online[23]. So, all in all, five minutes ought to be sufficient to transfer the money. A Finnish study on environmental impacts of online versus conventional banking channels also assumes the time requirements for customers using online banking to be five minutes[24]. It could be argued that faster (e.g. broadband) connections should be taken into account. Given that, in the case of online banking, the (time) limiting factor is the navigation on the website plus filling in of the credit slip by the customer rather than the actual data transfer, no additional connection types (such as e.g. broadband connections) have been considered.

Now that the time requirements for a single payment are defined, the equipment's total usage time throughout its life needs to be set[25]. Assuming that a PC is used for about four years in private households, it is the usage frequency that defines the total usage time of the computer. Yet user types and usage patterns seem to be as heterogeneous as the internet itself. The majority of the population has still never used an internet application, but an increasing number have made their first timid steps. For others however, it is a daily communication means. In order to cover these different patterns it is necessary to define certain user groups with typical usage patterns. Two studies obtaining information about how often users access the internet have been identified. MediaGruppe Digital states the share of users as a percentage of the total population (% Pop.) as of January 2001, and estimates the total number of users to be 22.2 Million in Germany[26]. Media Gruppe takes the population of internet users (% User) as its basis and is dated in 2000[27].

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[22] For an online time of 5 minutes, tentative and rough figures available for the material intensity of the internet infrastructure would result in a total material requirement of 0.02 kg.

[23] BB, 22 March 2002.

[24] Rinnekangas, Matti. (n.d.) *Environmental Impact of Electronic versus Conventional Channels in Retail Banking – Comparative LCI Study*. Merita Bank Plc, Nordea Finland.

[25] Data sources employed to identify the usage pattern take only German figures into account. Ultimately, these figures are needed to calculate the resource intensity per hour internet usage. Yet, studies looking at the Internets resource consumption in Europe are only known for Germany, so that German usage patterns needed to be taken into account.

[26] MediaGruppe Digital. (2001). *@factsmonthly – Januar 2001*. Unterföhringen, Germany: MediaGruppe Digital.

[27] MediaGruppe. (2000). *Ein Drittel der internet-Nutzer suft täglich* [One third of the internet users surfs on a daily basis]. MediaGruppe and Tomorrow Magazin.

*Table 3-1: Internet usage pattern in Germany.*

| **Daily** | | **Several times** | | **Once week** | | **Less** | | **Source** |
|---|---|---|---|---|---|---|---|---|
| % Pop. | % User | % Pop | % User | % Pop | % User | % Pop | % User | |
| 13.4 | | 12.6 | | 4.4 | | 4.4 | | MediaGruppe Digital. 2001 |
| | 34 | | 37 | | 16 | | 14 | MediaGruppe, 2000 |

The central characteristic pattern is that roughly one third of the population uses the internet on a daily basis, one third several times a week and the last third once a week or less. Thus, three groups can be differentiated by the time spent using the internet. As a result, the following user groups can be differentiated:

1. Power user: uses the internet on a daily basis (i.e.7 times per week)

2. Normal user: uses the internet several times a week (i.e. 4 times per week)

3. Infrequent user: uses the internet maximum once a week (1 time per week)

Two studies have been identified, that explored the average usage time per internet session. Infratest Burke determined for 2000 the average usage length to be 48 minutes per session[28], whereas MediaGruppe Digital states 62 minutes for 2001 (both figures are for Germany). The surveys indicate that an average usage time of one hour per session mirrors reality well. However, private computers are not only used for internet applications. Since studies quantifying average usage patterns for private PC in general (i.e. time running for text editing, internet applications etc.) could not be found, assumptions needed to be taken. Putting aside all PCs without any internet access it is assumed that internet applications account for one third of the time a private PC is running.

Based on this information, the bill payments share on the material intensity for the production of a PC and monitor can be calculated.

[28] Infratest Burke. (2000). *internet-Nutzung nach Dauer in Prozent der internet-Nutzer 2000 in Deutschland* [Length of internet usage in Germany 2000]. Quoted in: Bundesministerium für Wirtschaft und Technologie [German Federal Ministry of Economics and Technology]. (2001). *Monitoring Informationswirtschaft* [Monitoring Information Economics] – study by Infratest Burke GmbH & Co. and the Institute for Information Economics. Berlin: BMWi.

***Box 3-10: Material intensity: Consumer's PC + monitor (production)***

Key determines are:

- Total life-time PC: 4 years
- Usage pattern: 4 times per week for 1 hour each (normal user)
- Online time required per bill payment: 5 min

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.05 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 1.80 | kg |
| TMR | 0.05 | kg |

Now that the materials required in the production phase have been considered, the use-phase needs to be addressed. Taking the 5 minutes required for bill payment, different approaches may be used to estimate electricity consumption. The most simple - but incomplete - method would be to take an average PC's electricity consumption of about 125 to 150 W, and make a calculation of the electricity demand to run this system for five minutes (0.01 kWh). Applying the material intensity factors for the average OECD power mix, one would get the material intensity of running the PC.

It is not only the home PC that needs to be considered, but also the consumption by the internet infrastructure. Two studies have been identified that attempt to estimate the electricity consumption of using the internet in Europe. Barthel et al estimated the power consumption of the German internet infrastructure, including the customer's computer[29]. Taking their figures, one hour of internet usage would consume 0.51 kWh of electricity. This figure will serve as a basis for the calculation in this case study. Translating this into material intensities, amounts to:

[29] Barthel, Claus, Lechtenböhmer, Stefan & Thomas, Stefan. (2001). *GHG Emission Trends of the internet in Germany*. In Langrock, Thomas, Ott, Hermann E. & Takeuchi, Tsuneo. (2001) *International Climate Policy & the IT-Sector* (55-70). Wuppertal, Wuppertal Spezial 19, Wuppertal Institute.

### *Box 3-11: Material intensity: Consumer's PC + internet's electricity consumption (use phase)*

Key determinants are:

- 1 hour internet usage requires 0.51 kWh (includes network and client side IT equipment)
- 5 min internet usage requires 0.04 kWh

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.07 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 2.71 | kg |
| TMR | 0.07 | kg |

### *Box 3-12: Scenario: Material intensity: Consumer's PC + internet's electricity (use phase)*

The second study dealing with the issue is an estimation of the resource intensity of the internet infrastructure[30]. Due to major uncertainties and data gaps in the field of research, the author concludes that estimations of the material intensity of the entire infrastructure (including the materials employed in the production and end-of-life treatment of all IT devices) proved to be too difficult, but was able to generate a result on the use phase (electricity consumption). Two scenarios – a best- and a worst-case - are analysed, resulting in an electricity consumption for the entire infrastructure ranging from 0.39 to 2.35 kWh per hour, depending on the assumptions and boundaries. Taking the mean of 1.37 kWh, results would be the following. It needs to be stressed, that these figures are currently meant only for purposes of comparison and are not used any further within this study.

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.18 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 7.28 | kg |
| TMR | 0.18 | kg |

To obtain the full picture of the IT related material intensity, not only the consumer's side (consumer's PC production and use phase + internet's use phase) but also the bank's side needs to be considered. In particular the bank's IT equipment specifically used for online banking needs to be looked at. While for the electricity consumption (use phase) data

[30] Türk, Volker. (2001). *Assessing the Resource Intensity of the Internet Infrastructure: Data Analysis for a Material-Flow Oriented Approach and First Results on Electricity Consumption*. M. Sc. thesis at the Lund University, Sweden. [Online]. Available: http://www.iiiee.lu.se/ [2002, July 17].

availability is sufficient, information on the number and type of devices necessary to estimate the production's significance could not be obtained. Starting from the information available (the total power consumption) it was tried to make a rough estimation of the devices material intensity in the following way: 40 per cent of the electricity consumption is assumed to be caused by the air-conditioning, uninterrupted power supplies etc. Even though these devices are only installed to support the IT equipment, they are not classified as IT devices and therefore not considered any further. The remaining 60 per cent of electricity is "translated" into material intensities by dividing the total electricity consumption by the average power consumption of a PC. This results in a certain number of "PC units'". Multiplying these units by the PC productions material intensity results in the total material intensity for the online banking IT equipment. While this procedure can't be more than a very rough estimation, the results should be robust enough to indicate, that the equipment's material intensity is of rather low importance. Results are:

***Box 3-13: Material intensity:***
***Bank's IT infrastructure (production)***

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.02 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 0.71 | kg |
| TMR | 0.02 | kg |

In addition, the IT's electricity consumption needs to be considered:

***Box 3-14: Material intensity:***
***Bank's IT infrastructure electricity consumption***

Key determinants are:

- total current drawn: 55.7 kW
- operation time 24 h, 365 days
- Number of online bill payments processed: 6,776,000 per year

| | **per transfer** | |
|---|---|---|
| abiotic raw materials | 0.11 | kg |
| biotic raw materials | 0.00 | kg |
| water intensity | 4.59 | kg |
| TMR | 0.11 | kg |

## *3.4 Results*

This chapter summarizes the results generated in the previous chapter. Discussion of the results, presented in the next chapter will, in most cases, refer to the total material

requirement (TMR), which is the aggregation of abiotic and biotic raw materials[31]. With that the renewable (biotic) and non-renewable (abiotic) resource consumption will be the basis for drawing conclusions.

### 3.4.1 Traditional Banking Scenario

The table below gives a summarising overview of the calculation results. Discussion and conclusion follow in the next chapter.

*Table 3-2: Summarizing overview on the calculation results of the traditional banking scenario.*

| **Material intensity traditional banking scenario** | | | | | |
|---|---|---|---|---|---|
| | abiotic | biotic | water | TMR | |
| | kg | kg | kg | kg | % |
| Bank building infrastructure | 0.45 | 0.08 | 1.83 | 0.52 | 19 |
| Bank electricity consumption | 1.95 | 0.00 | 77.91 | 1.95 | 71 |
| Bank gas, water consumption | 0.11 | 0.00 | 8.18 | 0.11 | 4 |
| Credit slip | 0.01 | 0.00 | 0.31 | 0.01 | 1 |
| Monthly account statement | 0.01 | 0.00 | 0.14 | 0.01 | 0 |
| Transport by bank | 0.02 | 0.00 | 0.11 | 0.02 | 1 |
| Transport by consumer | 0.14 | 0.00 | 0.96 | 0.14 | 5 |
| Total | 2.68 | 0.08 | 89.44 | 2.76 | 100 |

The findings indicate that the bank infrastructure, and more specifically the banks electricity consumption, has by far the largest impact in the entire scenario. Compared to it, all other aspects except transport by the consumer are rather insignificant.

[31] Usually TMR includes as well soil movements. For reasons discussed in chapter 3.1.2, soil movements are not included.

### 3.4.2 Online Banking Scenario

*Table 3-3: Summarizing overview of the calculation results of the online banking scenario.*

| **Material Intensity online banking scenario** | | | | | |
|---|---|---|---|---|---|
| | abiotic | biotic | water | TMR | |
| | kg | kg | kg | kg | % |
| Bank building infrastructure | 0.14 | 0.02 | 0.58 | 0.17 | 15 |
| Bank electricity consumption | 0.64 | 0.00 | 25.36 | 0.64 | 58 |
| Bank gas, water consumption | 0.04 | 0.00 | 4.93 | 0.04 | 3 |
| Bank IT electricity consumption | 0.11 | 0.00 | 4.59 | 0.11 | 10 |
| Bank IT equipment | 0.02 | 0.00 | 0.71 | 0.02 | 2 |
| Monthly account statement | 0.01 | 0.00 | 0.14 | 0.01 | 1 |
| Customer PC electricity consumption | 0.07 | 0.00 | 2.71 | 0.07 | 6 |
| Customer PC | 0.05 | 0.00 | 1.80 | 0.05 | 4 |
| Total | 1.06 | 0.03 | 40.83 | 1.09 | 100 |

As in the traditional scenario, it is the banking infrastructure and related consumptions that contribute the most to the total score. Furthermore, the IT equipment represents a significant share of the material intensity.

## *3.5 Discussion & Conclusions*

This chapter discusses the results and finishes by drawing conclusions. First the methodology used is reflected upon, followed by case-study specific considerations. Last but not least, findings are aggregated towards a higher level, by drawing conclusions at a sectoral level.

### *The methodology*

The methodology used (MIPS) proved to be a suitable way to quantify the resource consumption of banking, or more generally, of a service sector. MIPS is based on a lifecycle wide approach and covers the material flows from raw-material extraction to the service provision, including the influence of customers' habits. By "reducing" the different factors within the life-cycle steps to their material content, usually incomparable factors such as e.g. consumers electricity consumption for online banking and the banks building infrastructure, are translated into a common unit. This unit (the material intensity) helped to identify the important factors from an environmental perspective, as well as to determine the environmental impact of banking. Knowing these influencing factors will help to prioritise efforts to reduce the overall environmental effects of banking.

### *The case study*

It is no surprise that the (building) infrastructure plays a significant role in the overall material intensity of traditional banking. However, it was not that obvious from the beginning that it dominates the other factors (e.g. transport, account statement etc.) in such an order of magnitude. However, it is not the construction and maintenance of the buildings, but the electricity consumption, which amounts to more than 1/2 (online banking), and almost 3/4 (traditional banking), of the total material intensity. A comparison of Barclays electricity consumption with some peers is presented in table 3-4 – although the numbers should be assessed carefully, as the definition of office space may vary and is not available for the peers at this stage. A thorough investigation could help to identify possible explanations and should be put into perspective by explanatory variables[32]. However, these numbers give a gross estimate and might show potential improvement opportunities.

*Table 3-4: Comparing the electricity consumption per m2/year of different banks.*

| | Electricity consumption in $kWh/m^2$ per year |
|---|---|
| UBS[33] | 144 |
| Deutsche Bank[34] | 157 |
| Barclays Plc | 190 |

[32] One explanating factor may be the fraction of office space dedicated to street costumer contact, which is higher in banks serving the mass market and might require more heating.

[33] UBS. (2001): *Environmental performance in figures*. p. 6.

[34] Deutsche Bank. (2001): *Sustainability - Ökologie, Ökonomie, gesellschaftliche Verantwortung* [Sustainability – Ecology, Economy and societal Responsitility]. p. 46.

The building infrastructure as such contributes 19 per cent (traditional banking) 15 per cent (online banking) respectively to the total. It seems worth mentioning that the seemingly virtual and hence “immaterial” online banking bears such a load. Yet, the online banking specific floor space with little more than 1,000 $m^2$ would be insignificant, but by including the head-offices contribution, the figure rose drastically.

In the case of traditional banking, the consumer's choice of transport mode is of importance as well, even though at a less important order of magnitude. If public transport or even walking or cycling are chosen, the material intensity would be reduced significantly. In general one can say that the means of transportation by the consumer can be influenced through the provision of incentives or disincentives to use the car (e.g. the provision of parking lots next to the bank) etc.

A key determinant for online banking is the IT infrastructure, in which both sides (customer and bank) contribute in similar orders of magnitude to the total load. Resource flows connected to the use phases (electricity consumption) are highly relevant, in both scenarios.

Credit slip, monthly statement and the banks transport needs are rather unimportant for the overall material intensity.

In order to “translate” the calculation results into a more accessible language, the bill payments material intensity can be compared with another product or service. The MIPS concept allows comparisons between seemingly incomparable issues, since the final results per service unit are expressed in "kg material intensity". The example chosen to compare the bill payment with is the production of aluminium beverage cans. A total material requirement of 2.76 kg per traditional bill-payment is equal to that required to produce ten aluminium cans. Online bill payment with slightly more than 1 kg still equals the production of four cans. Not included are the rebound effects for online banking. Quantification would require extensive research in customer habits, but qualitative considerations are possible. Overall, material consumption is not determined merely by the efficiency of materials usage. Gains in the efficiency can be balanced or even offset by increases in consumption or consumption habits in general. "In a dynamic and growing economy, when the productivity of a resource is improved, resources are freed for other uses. This is the essence of the rebound effect"[35]. It is the comfort of being able to do the banking from anywhere, anytime without the need to visit a branch that makes people use online banking. So the main efficiency gain is time saving and perhaps saving trips. The likelihood that these “efficiency” gains will be offset by additional consumptions is limited. Time wise the savings are notable, but not big. With regard to the reductions of trips the rebound potential seems limited as well, since banking activities are usually only one of several reasons for the trip. Nevertheless, including these effects would reduce the difference in the material intensities between traditional and online banking.

[35] Heiskanen, Eva; Jalas, Mikko & Kärnä, Anna. (2002): *The dematerialization potential of services and IT: futures studies mehtods perspectives*. Paper presented at the Quest for the Futures seminar, Finland Futures Research Centre, Turku, Finland, June 13-15, 2000.

## *The sector*

Contrasting the two scenarios' results, online banking shows clear signs of being beneficial compared to traditional banking. However, this conclusion can only be sustained, as long as online banking substitutes traditional banking in such a way that the resource intensity in traditional banking decreases. However, current practice indicates that online banking is, on the contrary, an additional banking channel (to provide maximum customer choice), and not leading to any relevant changes in terms of the material intensity of the traditional channel. A study by the European Commission's Joint Research Centre on the technological and economic impact of e-commerce concludes "the hype of the new economy has given way to a more realistic assessment. Traditional business models have not been overturned rapidly as a result of the introduction of new technologies. Market structures, rather than the introduction of new technologies, dictate the course of market conditions. Technologies primarily have an impact on the way companies operate internally rather than completely changing value chains".[36] Specifically for the banking sector the study summarizes "In this sector, relational innovations based on strong brands are likely to be more important than product innovations. Trust will remain an essential factor in a sensitive sector fulfilling an institutional role in the economy". [37] The Barclays case study confirms this finding in, so far as, almost no office space has been saved due to online banking[38].

Following this train of thought by assuming that the building infrastructure as well as the electricity, water and gas consumption will not change considerably with an increasing online banking share, ebanking will actually increase the material intensity in the banking sector. The reason for this is not only that it is an additional consumption but also, that by disregarding the infrastructure-related aspects of the calculation (building, electricity, gas, water), the traditional banking specific consumption (credit slip + transport) is only half as material intense as the online specific one (bank and consumers IT infrastructure + related power consumption).

This picture changes of course, if the multi-channel strategy is not a transitional phenomenon, but a long-term strategy. If banks are going to reduce their building infrastructure in the long run, either by closing branches or reducing branch sizes, online

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[36] see Desruelle, P., Verhoest, P., Ducatel, K., Burgelman, J-C., Bogdanowicz, M. & Punie, Y. (2001). *Techno-Economic Impact of E-commerce: Future Development of Value Chains.* Report on a Workshop held at IPTS, 5-6 June 2001, IPTS Technical Report, Seville, Report EUR 20123 EN, European Communities, November 2001.

[37] see Desruelle, P., Verhoest, P., Ducatel, K., Burgelman, J-C., Bogdanowicz, M. & Punie, Y. (2001). *Techno-Economic Impact of E-commerce: Future Development of Value Chains.* Report on a Workshop held at IPTS, 5-6 June 2001, IPTS Technical Report, Seville, Report EUR 20123 EN, European Communities, November 2001, p. 30.

[38] BB, 22 March 2002.

banking will contribute to a decoupling of economic growth from material turnover. Even if the rebound effects are to be included, online banking is most likely less material intensive than traditional banking. There is however a qualification to this statement. Rebound effects do not only occur in the banking sector, but in almost all Internet applications to various extents. While looking at each application separately they might not seem to be significant, an aggregating on the macro level could look different.

# 4. The Social Dimension of Banking

## *4.1 Introduction*

### 4.1.1 Background

From 1945 until the early 1990s the European retail banking sector was relatively stable: it relied largely upon the single channel of the branch network, saw little churn among customers and was able to rest upon the popular perception of banks as inherently reliable, trusted and secure. Before 1985 a regular banking customer in the UK would have spent their adult life with one provider for their current account and, if they had one, a loan. He or she knew that banking had to be done before 3.30pm and was not available during public holidays[39].

Compare this with the picture today: a multichannel banking environment including the bank branches, use of the telephone, internet, television, and even coffee shops. Consumers can bank 'any time, anywhere, and any place'[40] - a recent Barclays Bank advert featured actor Robbie Coltrane banking in bed at night and on top of a mountain. Consumers' expectations have changed and the genie won't get back in the bottle.

Customers are not the only ones to experience major developments either. Financial services companies have seen great changes. Worldwide agglomeration in the banking sector and the introduction of financial services from supermarkets and insurers (to give but two examples of many) has blurred the lines between what is and is not a bank. New business models have been introduced and competition is fierce.

This paper is not the place to delve deeply into what factors brought the retail banking industry to where it stands at present, however it can be confidently stated that technological developments - from the introduction of ATMs (Automatic Teller Machines, popularly known as cashpoints), through telephone banking to ebanking - have played a crucial role: '…the biggest shake up in the financial services industry since the 17th century.'[41]

What this paper does aim to do is to assess the social impact of ebanking across society, asking what benefits and drawbacks there are, and considering how these benefits can be best made available to the whole of society for its mutual benefit and how the drawbacks can be mitigated. Firstly we consider the interaction between banking and society. We then address the nature of ebanking and specifically Barclays experience. Finally, as ebanking is but one of a number of channels, we investigate the relationship between sustainable development and the multichannel banking environment.

[39] Most public holidays are known in the UK as 'bank holidays' – perhaps a term ripe for revision

[40] 'Today, customers are increasingly demanding a "Martini" style banking' F. Li, 2002

[41] 'Internet shakes up banking' *FT* 9/9/02

## *4.2 Banking and society*

We often think of money as a physical commodity. Yet, throughout history, money has taken very different forms – dogs teeth in the Admiralty Islands, gold during the 19th century and binary digits on the internet. Money can be better thought of as a social convention – a means of payment accepted without question (Pearce, 2002).

The origins of modern banking lie in medieval Italy where goldsmiths would provide a service to other traders. As they had to have secure means of keeping their precious gold, they could also protect others' goods and money. Goldsmiths and bankers became the centre of vital social networks that quickly spread throughout Europe. These networks were rooted in norms of trust and mutual obligation. Banks still provide essentially the same service: money is exchanged today for the promise of money in the future. Trust is essential between institutions in the financial sector as well as between financial institutions and the public. In the absence of trust, the system collapses, as occurred in Germany in the inter-war years and most recently in South America.

The glue that bonds such social networks is also the oil that lubricates them: social capital which is a major element in sustainable development. At the Forum for the Future, we consider sustainable development to consist of the management of 'five capitals': natural (i.e. natural resources such as clean air, pure water, land etc), human (i.e. education, personal development, human rights), manufactured (e.g. products, goods etc), financial and social. Social capital has been most famously described by the Harvard sociologist, Robert Putnam, as:

> "…features of social life - networks, norms, and trust - that enable participants to act together more effectively to pursue shared objectives… Social capital, in short, refers to social connections and the attendant norms and trust." (Putnam, 1995)

Businesses have long realised that goodwill is a crucial component of business success. Banks, perhaps more than most other kinds of business, establish long term relationships with customers that underpin these 'norms and trust'. For example, one norm is that a bank will look after my money, pay interest as agreed and provide it for me when I request it. Building upon this basic norm, banks are constantly looking for innovative ways to maintain these relationships, offering different products, services and channels. The maxim of 'a happy customer is a good customer' typifies this business approach. Thus it is in the interests of banks to promote social capital for the success of their own services.

Looking more widely, there may be scope to take banks' long experience of building and maintaining relationships and apply it in areas of society where trust has broken down, where there are high levels of unemployment, crime and poverty. In such places residents are less likely to participate in the social norms that we might call civil society: voting, neighbourhood watches, membership of societies and clubs, etc. The result is often a sense of disenfranchisement and exclusion from wider society, hence the use of the terms social exclusion and social inclusion. In such areas banks have invested heavily. A fine example is the Barclays SiteSavers project that Barclays runs in collaboration with Groundwork: it 'aims to use improvements to the physical environment as a stepping stone to greater community confidence, improved public health and reduced fear of crime'.

### *Universal Banking Services*

In the UK, approximately 14 million claimants currently collect benefit payments from a Post Office branch. Of these, it is estimated that about 3.5 million claimants do not have a bank account.

The Government has decided that payments directly into bank and building society accounts will be the normal method for paying benefits, pensions and tax credits from April 2003. Order books and Giro cheques will be phased out over a two-year period, with all benefits being paid into an account by 2005.

In a memorandum of understanding with the Government, twelve banks and building societies (including Barclays) agreed to make their basic bank accounts available, free of charge, at Post Office counters from April 2003. For example, in October 2000 Barclays launched the Barclays Cash Card Account 'for people who had previously found it difficult to open a traditional bank account because they had no financial track record and for those concerned about the possibility of going into debt.'[42] The account has been hugely popular, with approximately 200,000 account holders by the end of 2002.

In addition to reducing costs for Government (automated credit transfers cost a fraction of the price of order books and Giros), the Universal Banking Services initiative will reduce benefit fraud, and help increase the number of people with bank accounts i.e. combat financial exclusion.

The opportunities for banks in offering universal banking services clearly include access to a previously untapped market, though the challenge is to serve this market in a cost-effective fashion. Moreover, not all retail banks are subject to the agreement with the Government, allowing those without a branch network the freedom to refuse low value customers, giving them considerable market advantage.

Financial exclusion is a related issue and one which banks can and do address. In some areas it overlaps with social exclusion – poor education, unemployment and poverty are common reasons for both. Without a bank or building society account people cannot pay by direct debit (thereby benefiting, for example, from lower utility bills), withdraw cash from an ATM or pay with a debit card. According to Debt on our Doorstep[43]:

> 'One and a half million households in the UK lack even the most basic of financial products, such as a current account and home insurance. A further 4.4million are on the edge of financial exclusion.'[44]

However, reasons for not engaging with the banking system are varied and sometimes people have made a conscious decision not to do so.[45] The alternatives to the standard banking system are not only sometimes on the fringes of the black market, but can also be highly detrimental: research by New Economics Foundation suggests that loan sharks offering lending rates 1,000 – 2,000% are not unusual.[46] There is a possibility in such

[42] Barclays Social and Environmental Report 2001, p.8

[43] Debt on Our Doorstep are 'a national network of organisations which have come together to campaign to relieve the burden of debt on low-income households and to promote solutions to the growing problem of financial exclusion in the UK' (www.church-poverty.org.uk/dood1.htm)

[44] *Show and tell: a community investment rating*, Debt on our Doorstep, April 2002

[45] People keen not to leave a trail of information about themselves, or who wish not to pay tax, for example.

[46] *Profiting from Poverty: Why debt is big business in Britain*, New Economic Foundation (2002)

situations of merely increasing levels of debt and poverty. In order to provide beneficial alternatives, high street banks have been working with a number of organisations to provide banking services to the financially excluded, for example, supporting credit unions, and offering services through the Post Office .

The high street banks financial inclusion programmes include support for Community Development Finance Institutions (CDFIs), Credit Unions, free debt helplines, financial education and the Universal banking Services. Barclays are currently involved with all these trust-developing opportunities which contribute to building social capital. This can not only build trust in the banks themselves but in the banking system and perhaps in the wider areas of civic involvement.

The significance of investing in social capital lies in how it affects a whole community. Though only certain members of a community may get involved in a Barclays SiteSavers project, open a basic bank account or call a debt helpline, the effect can be contagious. People notice positive environmental changes and react with more respect for their surroundings, offer advice to neighbours or direct others to micro-credit initiatives. The observation of the wider benefits to a community from accrued social capital have been described as 'networks of opportunity'[47].

Some sociologists have drawn parallels between high levels of trust (and hence social capital) with economic development and even relative wealth on a macro-economic level. As Putnam writes, “Studies from Tanzania to Sri Lanka to Italy have found that economic development under some circumstances can be boosted by adequate stocks of social capital” (Putnam, 2002). In particular, “extended trust” is seen as underwriting successful economies. The World Values Survey, which was last conducted in 1995-6, asks the question “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people?”. The results show that countries where trust of strangers is high, tend to be countries with higher GDP. The country scoring highest for trust in 1990 was Norway (65 per cent of respondents said that people could generally be trusted). The average score for OECD countries was 45 per cent, while in South Africa trust was recorded at just 16 per cent and in Brazil at just 3 per cent (Keser et al, 2002).

As banks are well aware, therefore, their social capital-building activities have positive impacts that can extend throughout societies. In the next chapter we will look at what constitutes ebanking and consider its use by customers at Barclays. We will then be able to evaluate social capital across the multichannel environment.

[47] Perri 6, 1997

## *4.3 eBanking*

### 4.3.1 An introduction to ebanking

By 2011, some experts predict that 80 per cent of bank customers in the UK will use the internet to connect to their bank.[48] Others, like Barclays Director, eChannels, Simon Newman, would put that figure at a lower 50 per cent. Regardless, the sheer scope of ebanking is enormous and the resources already committed towards ebanking have been enormous too: Forrester Research estimate that in western Europe between 1999 and 2001, 13bn euro was spent on internet and call centre technologies.[49] By the end of 2004, electronic bill payment and presentment (EBPP) around the world will be worth $2.5bn.[50] In 2000, McKinsey's identified over 2,500 banking websites across western Europe.[51] "Research has revealed," writes Prof. Feng Li of the University of Newcastle, "that new entrants in their various forms are posing a serious threat to incumbent banks, not necessarily in eroding the latter's market share and 'cherry-picking their most profitable customers, but primarily changing the rules of competition and raising the general expectation of customers for services from all financial companies."[52]

Recent research from brand consultants, Henrion Ludlow Schmit, suggests, however, that established banks like Barclays are much more trusted by consumers in the UK than new entrants. “People tend to be more conservative in judgement when they look for a bank,” according to Chris Ludlow, “ even if they are younger. They don’t go for high fashion or trendy style in a bank. They go for someone who looks after their money.” [53]

The attractions of ebanking are diverse. In a study of the UK's online retail banks in 1997 the following were given:

- The internet can protect or enhance the bank's reputation for innovation
- Ebanking provides added value to customers
- Banking over the internet offers marketing opportunities for reaching new customers
- Current customer demand can be met better online
- Competitors were offering services and the banks interviewed for the survey felt that they needed to compete with them

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[48] *The Future of Internet Banking: what the international experts say* Bradley, L. and Stewart, K., University of Ulster, 2002 (need clearance from authors before publication)

[49] 'An urgent rethink on internet strategies', Nairn, G., *FT*, 5/6/02

[50] *Internet banking, some emerging tendencies in the UK*, Li, F., 2002

[51] 'Giving Europeans an on-line push', Bughin, J.R., *McKinsey Quarterly*, 2001

[52] F. Li

[53] Henrion Ludlow Schmit’s research suggests that only one in five of consumers trusted online-only brands more than establish high street banking brands. Sources: *New Media Age* and *Design Week*, both 21 November 2002

- There were opportunities to develop mass customised services.[54]

Essentially these can be broken into either marketing opportunities or efficiency gains.

From the other side of the relationship, customers are looking for more flexible banking hours, the 'kitchen table' fashion in which different accounts can be seen simultaneously, lower interest rates and better access to information.

Of course, ebanking was not the first new technological banking channel to be introduced. In 1967 Barclays introduced the world's first automatic teller machine (ATM). In the late 1980s telephone banking was offered as a new service. By the mid 1990s Western European banks and customers were already using a multichannel environment.

Early predictions of the impact of ebanking were in tune with the murmurs of revolution that surrounded the internet hype of the late nineties. At the very least, some commentators warned, the structure of retail banking will be shaken up; at worst bank branches were doomed.[55] Now, at the beginning of 2003, we are in a position to assess exactly where ebanking stands. There have been a range of strategies developed by both traditional banking providers and new entrants to the market, some of which have a greater reliance on branches than others. These business models have been categorised by Li as follows:

| **Business models** | **Characteristics** |
|---|---|
| New distribution channel | Internet as part of multi-channel strategy but no radical change in the basic strategy and business model of the bank |
| EBanking | Use the internet to underpin key processes and integrate different channels, and transform the main brand into an ebrand |
| Baby eBank | Launched by incumbent banks and other financial companies with its own ebrand name and product range, often based on new business models |
| Pure play new entrants | Pure virtual bank set up by non-financial companies |
| Portal | Aggregate financial product information from multiple sources and act as the access point for customers, often focusing on particular product range or customer segments |
| Online alliances | A bank out-sources its internet banking solution to a third party, but the services bear the bank's own name |

[54] 'Online banking: strategic and management challenges', Daniel, E. & Storey, C., *Long Range Planning* , [1998] Vol. 30 No.6 pp890-898

[55] 'The Internet and the banks' strategic distribution channel decisions', Mols, N.P., *International Journal of Bank Marketing* 17/6 [1999] pp.295-300

| | |
|---|---|
| White labelling | Non-bank company provide internet banking services through partnership with incumbent bank but not bearing the bank's brand name |
| Brand stretching | Non-bank players with an established brand provides banking services through the internet |

Table 4-1: the different business models used in ebanking. Source: Internet banking, some emerging tendencies in the UK, Li, F. 2002

Of 26 internet banks in the UK identified by Li, all use one or several of these strategies (as they often provide several kinds of ebanking service for different market segments).

The success of these strategies has varied, highlighting the fact that ebanking is an umbrella term for a whole range of business models and experiences. Some of the unsuccessful ebanking ventures have tried very different business models from the successful examples such as Barclays.[56] However, it is clear that branch banking is far from dead, though it has 'seen its role and image change to meet the requirements of the changing banking environment.'[57] And internet banking has become a complementary channel.

The picture that is emerging is complex, largely because customers are difficult to second guess. That said, of course, over time customer usage is starting to show some patterns. Ebanking is changing how we bank, where we bank and when. In doing so, it is changing the relationship between banking and social capital, creating new risks and opportunities for the sector and for society. To assess these risks and opportunities we will firstly consider the data on ebanking usage in the UK and then look at the challenges presented by the multichannel environment for social sustainability.

#### 4.3.1.1 Customer usage

According to a regular survey on attitudes towards technology by MORI for the internet bank Egg, as of February 2001, 59 per cent of British adults had used some interactive technology (Internet, WAP, iDTV) within the previous six months. Of that 17 million adults:

- 43 per cent had bought products online
- 33 per cent had used internet banking facilities
- 31 per cent had searched for jobs online
- 18 per cent had visited an internet chat room[58]

It is clear that, for a large part of the UK, ebanking is a present reality. However, there are different patterns of usage. To look at this in more detail, we asked Barclays to analyse some of their customer usage, particularly to consider who is using their online services, when and where. First, however, we sought to verify that ebanking is part of a wider trend in attitudes to new technological banking channels.

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[56] Barclays has seen considerable growth in take-up of ebanking services in recent years (see below), and higher cross selling ratios of their products to customers using ebanking services.

[57] 'Does the internet compete with bricks and mortar bank branches?' Yakhelf, A., *International Journal of Retail and Distribution Management* Vole 29, No.6, 2001, pp.272-281

[58] *The Egg Report*, February 2002, MORI

#### 4.3.1.2 Usage of technology and channels

Unlike a number of their competitors, Barclays has not launched an internet only bank. Their approach is to offer a variety of banking channels which customers may use as and when they think it appropriate.

### *Box: Barclays banking channels*

Like all incumbent retail banks, Barclays retail banking has traditionally been offered through its branch network which currently stands at 2,084 branches in the UK [in 2000 the figure was 1,727 - but this did not include Woolwich branches]. There are now 3,900 Barclays and Woolwich ATMs around the UK, this includes those sited in areas without branches.

In 1994 telephone banking - Barclaycall - was introduced to personal and small business customers as an additional banking channel. Internet banking was introduced to Barclays customers in 1997 and there are currently six Barclays websites offering retail banking services: retail, premier, Woolwich, Barclaycard, Barclays Small Business and ClearlyBusiness.com.

As of June 2002 there were 3.5m Barclays customers registered for online banking compared with 2.7m the same time the previous year. Of the 3.5m, 273,000 are businesses.

Though Barclays has been using ATMs for over 35 years, there is still a marked skew in their use towards younger customers. 56 per cent of Barclays customers are between the ages of 23 and 40 and it is this segment that uses ATMs most regularly. The same pattern can be observed in the take up of Barclays online services: between the ages of 20 and 48 customers are considerably more likely to bank online than those above 48. Curiously, over the last two years, though the number of customers has more than doubled, the age profile of Barclays ebanking customers has barely changed, with a peak of 4 per cent of banking customers being between 28-30 and a lower peak at 1.7 per cent between 53-56. It should be added, though, that research by both Barclays and MORI suggest that 'silver surfers' (internet users over 45) though less numerous, are some of the more active users.[59]

There are two main places where Barclays ebanking customers access the internet: at home and at work. A study from December 2001 noted that over 70 per cent of visits to Barclays ebanking sites were from home (12.8m instances out of 17.3m). Though customers tended to ebank most between 9 and 12 in the morning (i.e. during traditional banking hours), there tended to be a surge at between six and ten in evening, suggesting that customers like the opportunity to bank outside standard branch opening hours. However, customers do still tend to align banking with the working week, with approximately twice the volume of customers and twice the number of bill payments on a working day as on a Saturday or Sunday. Moreover, this pattern also changed little between 2000 and 2002.

The most regular use of ebanking services is for bill payment, a service Barclays see as a main driver for users getting online to bank, a view backed up by MORI's research for Egg that suggested that 22 per cent of ebanking users pay bills online[60] which compares to almost one third of Barclays customers. This can be explained simply as most utility bills change little from month to month and require little by way of advice from a member of banking staff.

[59] *The Egg Report*, February 2002, MORI

[60] *The Egg Report*, February 2002, MORI

Over a three month period, 86 per cent of customers who use the ebanking service also used a bank branch and 85 per cent used an ATM. This approach is more common among ebanking users than the whole current account base. 86 per cent of the current account base use a branch but they are considerably less likely (63 per cent) to use an ATM than ebanking customers.

As for Barclays business customers, 30-40 per cent now bank online, particularly as ebanking is being promoted to business people as a resource for information, advice and additional services, such as ClearlyBusiness.com. There are potentially enormous efficiency gains to be made when information from a bank can be speedily and almost seamlessly downloaded into accountancy software on a computer. In the US, many marketing campaigns for ebanks offer free accountancy software as a bonus.

#### 4.3.1.3 **Differences by gender**

Initially Barclays experience in online recruitment of customers reflected this bias towards males (as much as 80 per cent to 20 per cent in early 1999). By mid-2001, the balance was almost 50:50, following an increase in branch marketing of ebanking services from 2000.

Following recruitment to ebanking services, men have traditionally been more likely to use the internet than women. 67 per cent of men in the UK as of February 2002 compared with 51 per cent of women.

The rise in recruitment of customers and its link to the promotion of the service in branches may also be partly responsible for the surge in usage by females from early 2000 onwards. Again, as with customer recruitment, usage in early 1999 was roughly 80:20 male:female, but by mid-2002 stood at 51:49. Conversely, there is a slight female predominance in the usage of Barclays telephone banking service.

#### 4.3.1.4 Social differences

MORI found that in the UK, there is a bias towards social group AB and C1 in internet use with a higher proportion of people in full time work accessing the internet than the unemployed,[61] and the same is true for ebanking services.

As might be expected, Barclays data suggests that against its current account holder base, customers who use the ebanking channel tend to have a higher income and display some of the characteristics associated with it such as use of air travel, ownership of a computer, use of a credit card etc. Equally, therefore, non-ebanking customers tend to have a lower income, use cash as opposed to plastic, draw a pension and social security funds. It would be fair to note that whilst access to a computer at home is not a prerequisite for ebanking (as we have seen, many transactions are carried out at work) office workers tend to have higher salaries and are more likely to have a computer at home.

#### 4.3.1.5 Regional differences

There are major differences in the take up of the internet in the UK by region (see below). It is to be expected therefore that the use of ebanking is likely to reflect this. On asking respondents about whether they had used interactive technologies within the previous six months, MORI found that:

[61] *The Egg Report*, February 2002, MORI

- 56 per cent of adults in the South East (excluding London) had
- 50 per cent of adults in London had, whilst only
- 39 per cent of Scots and
- 23 per cent of Welsh adults had done so.[62]

In regional terms, the situation of Barclays customers largely reflects the branch network with a bias towards urban areas and the east of England (which has a high density population), making it difficult to compare its data with MORI's, though the statistics would suggest that ebankers are more likely to be in London and the South East merely according to the opportunities available. Barclays experience is that its ebanking customers reflect their branch network, with a slight skew towards East Anglia and the M4 and M5 motorway corridors (see map, below).

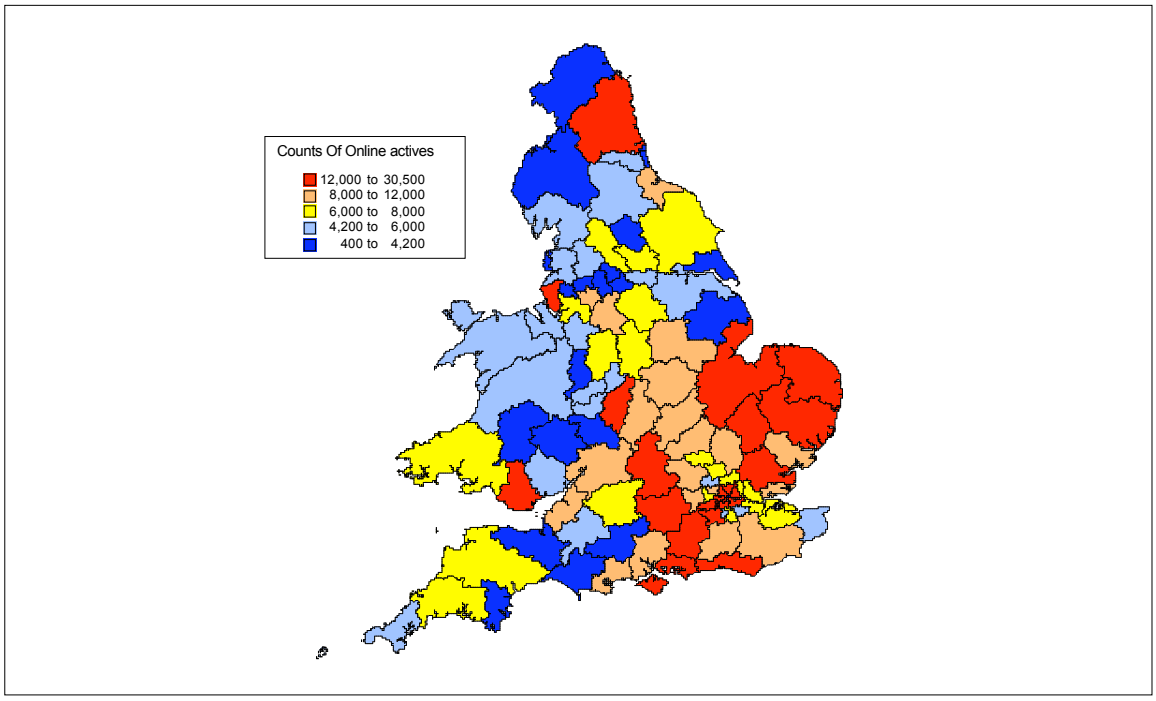


*Figure 4-1: Diagram showing the location of online users in England and Wales, courtesy of Barclays plc*

[62] *The Egg Report*, February 2002, MORI

## *4.4 Social capital and the multichannel banking environment*

In 4.1 we saw the role of social capital in banking and society, how it is developed and its wider impacts. In 4.2 we looked in detail at Barclays customers who choose to bank online. We can now bring the two together and look at how social capital and ebanking interact by addressing some of the relevant pressures on business and society identified in the wider Digital Europe theme report Social Responsibility in the Information Society:

~ Increasing need for technological literacy

~ Increased access to information

~ Virtualisation of products

~ The creation of a distinct, virtual space

~ Increasing importance of trust.

#### 4.4.1.1 Increased access to information

There has been a massive increase in the number of people registering for ebanking services in the last four years. Moreover, Barclays has noticed that the amount of time spent banking online and the number of transactions made increase as individual customers grow in confidence[63]. This would seem to be an extension of MORI's observation that internet users are more likely to have arranged or serviced a financial product online the longer they have been online.[64]

Equally, though, some things we might hope for or expect have not been happening: over the last three years, the increase in the number of ebanking customers comes largely from the same segments in society, by age, region and income, as previously (gender being an exception).

[63] Barclays Simon Newman described how some users move £1 from one account to another just to 'see that it works' and then develop confidence over time.

[64] *Egg Report*, ibid. Only 16 per cent of adults who have been internet users for a year or less have serviced a financial product online as opposed to 60 per cent of users with three years online experience

### *Box: Reporting on social issues*

Like all businesses, banks are under pressure to report and act upon their social impacts. The Global Reporting Initiative (GRI) has issued guidelines on reporting and is currently working with different business sectors to develop sector-specific indicators. At an international level, one such project is SPI Finance (Social Performance Indicators for the Financial Industry).[65] The indicators identified are arguably tough: 'Many of the indicators proposed could prove to be challenging even to leaders in the field of reporting on social performance.'[66] In the UK specifically there have been voluntary moves toward reporting guidelines through FORGE, a group of leading insurance companies and high street banks including Barclays who are developing guidelines for CSR management. Yet, whether it is in the management of CSR policy, supplier satisfaction, employee profile or any of the other indicators, the internet is going to be a crucial tool in both collecting data, communicating it and acting on the results.

Moreover, the digital divide may also become an issue of interest to the investment community in the not too distant future. Socially Responsible Investors (SRI) already consider the digital divide as a key non-financial social risk for the telecoms industry and may in time do likewise for the financial services industry. For this reason, effective social reporting will be even more important.

To a large extent, ebanking customers reflect general patterns of internet access and usage within the UK. Taken as a whole, internet penetration in the UK was 37 per cent in 2001. However data at a regional level varies greatly. The generally prosperous regions of London and South East England have penetration levels 8 per cent higher than the national average, while less prosperous regions in the country's periphery, such as Wales and Northern Ireland, have penetration levels 10 and 11 per cent below the national average respectively. Internet access in Wales is on a par with the Czech Republic, while two hundred and fifty kilometres away in London and the South East, access levels are among the highest in Europe.

While internet penetration continues to grow across Europe, certain segments of the population are being left behind. The disabled, with a variety of difficulties of accessibility and affordability, are less likely to be online, as are women and those living in rural areas, for different reasons. Real concerns have been expressed about the ability of low income groups, the elderly and people with low levels of education to get connected and use the internet (European Commission, 2001a). Digital inclusion tends to reflect patterns of social inclusion. The financially excluded are, therefore, likely to be on the wrong side of the digital divide. With this in mind there are a number of initiatives attempting to overcome these barriers. A notable example is Youreable.com, a website set up with the backing of Barclays, to provide advice and support to disabled people.

There are alternatives to the PC for accessing ebanking. Woolwich, part of the Barclays group, is among the first financial providers to offer access to banking services via Digital Interactive Television. This approach recognises that television has much greater market penetration than internet enabled PCs are likely to for some time, particularly amongst the poor and unemployed. Barclays see DITV as an innovative way to provide some of the

[65] www.spifinance.com

[66] *SPI Finance 2002*, draft report, October 2002

benefits of ebanking without necessarily the expense of a PC and separate internet connection.

Both Barclays and MORI point to greater online take-up of certain services that could be considered routine or mundane such as credit cards, travel insurance and most of all, car insurance. The major, 'one-off' financial decisions such as the purchase of a mortgage is still left largely to a personal visit to a branch when possible.[67]

Perhaps most significantly, Barclays research has noted an increased sense of wealth on the part of its ebanking customers. Research by Niels Peter Mols in Denmark has found a similar effect:

> '…compared with non-users, home banking users are more satisfied with their bank, have higher intentions of repurchasing, provide more positive word-of-mouth communication and are less likely to switch to another bank.'[68]

This is probably aligned with increased financial confidence and self-reliance, though further research needs to be carried out to identify whether there is a causal link.

### 4.4.2 The increasing need for technological literacy

In chapter one we looked briefly at financial inclusion. There are clear overlaps between financial exclusion – which is sometimes caused by poor financial literacy – and technological literacy – which also often has poor education at its roots.

Banks have been addressing financial inclusion for a number of years now. The work of Pfeg (the Personal Finance Education Group) has been important in tackling poor financial education. The group, supported by Barclays and other financial services groups, promotes financial education in schools. Pfeg's Access and Excellence scheme is a four-year pilot programme involving 300 schools and focusing on providing training for teachers with a view to improving the financial skills of pupils.

Now banks have started work tackling technological literacy. The traditional early adopters of ebanking were relatively wealthy men who, by and large, tend to work with computers and are technologically literate. Now that a much greater proportion of the technologically literate (both male and female) are using ebanking services, the challenge is to offer the opportunities brought to customers from banking online to those who are technologically illiterate.

Banks acknowledge that simply by putting internet enabled PCs in branches won't be enough to encourage non-users to take up ebanking. The technology has to be right: for example, with settings locked to prevent malevolent interference. Staff need the technical skills to assist customers and customers in turn require some training to gain the skills and confidence to use the technology successfully. Barclays research suggests that without these preconditions much the same people would use the public internet access points in branches as use ebanking already at home and at work. In a pilot scheme being launched later this year, Barclays staff will demonstrate ebanking to customers at 700 branches.

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[67] 'Face-to-face banking preferred', *The Guardian*, 8/2/02

[68] Mols, *ibid.*

The need for training in these vital life skills goes beyond the standard education system, however. As we have noted, financial exclusion is sometimes a problem for the old, the disabled and rural inhabitants. Barclays has been working with charities to develop innovative ways of providing, not only the access to the technology, but training too. To give but two examples:

- The benefits of the IT revolution are just beginning to reach older people with only 12% of those aged 65 and over have used the Internet. 40% of people between the ages of 55 and 64 are currently getting online.[69] An increasing number of services are being offered through new technologies, whilst many older people continue to face barriers of cost, physical impairment and a fear of new technologies. In Barclays work with Age Concern mobile IT units have been taking technology and technology training to socially and geographically isolated individuals. Without progressive initiatives like these Internet taster schemes, older people risk becoming socially excluded.

- Together IT Works is a project run by Barclays with the RNID developing a fully accredited IT training course for deaf people, who have one of the highest rates of unemployment in the UK. The course will help deaf and hard of hearing people gain the IT skills they need to compete in the job market.

Banks are well placed to provide training in financial and ICT skills outside the formal learning environment. The payoffs for schemes such as the above are not only better opportunities for a wider section of society with regard to ebanking, but better skills in general, which should produce benefits across society. Basic ICT skills are becoming a prerequisite in the workplace. On average 53.2 per cent of workers in the EU reported using a computer for work in October 2001, up from 45 per cent in November 2000 (European Commission, 2002b). The internet also provides new channels for obtaining job-related information. Over 30 per cent of internet users in the UK have searched for jobs online (Coyle & Quah, 2002). A considerable amount of computing work also involves dealing with finance: it is one thing to be able to get the computer and the spreadsheet running, another to deal with the financial skills required to put them to good working use. Digital and financial skills require each other in the modern labour market.

It may be significant that the biggest moves towards gender parity in recruitment of customers for Barclays followed increased marketing of the internet banking service through the branch network in early 2000. This might suggest that there is scope for further leverage of the branch network's reputation for trust and security. From a banking perspective, stimulating usage is critical as the take up of banking services requires significant online experience. Already Barclays are planning to demonstrate ebanking services within some branches, there may be scope in future to provide some training to less technologically confident customers. As IT and financial skills are transferable into other areas such as people's careers, the corollary benefits of such training could include greater social and financial confidence, greater earning power, and a wealthier society.

What is particularly encouraging, is that Barclays see 'massive opportunities'[70] for developing core skills in customers through the online environment in future. They also sense a role in developing financial responsibility, particularly as a 'significant proportion of our business is in

[69] UK Office of National Statistics, July 2002

[70] Conversation with Barclays, 11 June 2002

lending products'. [71] It is to be hoped that the sector in general takes this on board, and sees the internet as a way of promoting this.

### *Box: Barclays experience: staff development and training*

Barclays staff training was formerly focussed at a number of training centres around the country. New technologies have given Barclays the opportunity to bring learning to its employees and not vice versa. Barclays University (bu as it is branded internally and externally) is a much more streamlined approach to corporate learning, with a prize winning portal online, staff access to Learndirect centres around the UK and initially a £150 credit for all staff to spend on the training they want.

Additionally, there are network training and briefing sessions: informal in-house training on product/service promotions, key skills, banking policy etc. These are ideal opportunities for staff to maintain ebanking readiness, particularly ahead of pilot schemes to place internet access points in branches. Moreover, when sixty executives were given GPRS-enabled PDAs to trial as they travel, each had a brief training session of either 30 minutes or an hour. The helpdesk received calls mostly from the 30 minute trainees, suggesting that it is important to give adequate training early on.[72]

#### 4.4.2.1 Virtualisation of products

As telephone and online banking became widespread in the 1990s, banks were taking difficult decisions about the management of their branch networks to ensure their long term economic sustainability. The response of some of the media was to assume a causal link from one issue to the other. The picture is more complex, however.

Branches are now more like shop-windows than ever, offering a huge range of financial services under several different brands (one has even collaborated with a coffee shop company to sell cappuccinos and mochas to banking customers). As more customers withdraw cash from ATMs, staff have to deal less and less with cash transactions. Complex, secure computer networks give staff access to more customer information, more quickly. The size of the technology, meanwhile, has shrunk, and with the automation of many tasks, fewer staff are required. The result is that many premises are too large and therefore sometimes less efficient to run – and the cost is transferred to the customer – a fact that both high street and internet-only banks acknowledge.

Moreover, the high street itself is changing. Many high street shops have moved to ‘out-of-town’ sites. The need for social hubs in communities remains. Personality and locality are highly valued factors in people's relationship with banks. Though banking practices may change, innovative strategies are being developed to continue using branches as social hubs. In one of a number of similar examples, Barclays worked with the community, in Reith, North Yorkshire, to turn an old branch into a new community resource centre.

Some aspects of branch banking have not changed however. Small businesses still need local banks to do what they have done since the middle ages: store money securely. Customers still wish to speak to a knowledgeable member of staff when considering major

[71] Conversation with Barclays, 11 June 2002

[72] 'Bank finds time really is money' by Stephen Pritchard, *FT* 2 November 2002

financial commitments like mortgages. Despite the introduction of new technologies, many customers, particularly senior customers, still prefer to withdraw cash with a cheque book.

In a project begun in January 2002 and initiated by the British Bankers' Association, four banks offer services through each others' branches where only one bank branch remains in the community. Three Barclays branches are welcoming customers of HSBC, Lloyds TSB and NatWest in addition to their own and they, in turn, are offering their services through other banks' branches in seven other locations. This should also be seen within the wider picture of Universal Banking Services and the banks' work with the Post Office.

The challenge for banks in considering the social impact of ebanking on the branch network is how to retool the branches to do what the internet currently cannot:

> "…banks can concentrate on… more specialised, advisory and counselling services, which subsequently extend their business scope. Such new domains, new services and new markets, which may not necessarily be directly related to finance, require different skills and a different supporting infrastructure, a different mode of service process and delivery – one that puts emphasis on face-to-face interactions with customers."[73]

#### 4.4.2.2 The creation of a distinct, virtual space

The online environment permits applications that are difficult or impossible elsewhere. As a distinct, virtual space, the internet can become a space to access useful information, to compare products and services and to ask questions of others in similar positions to yourself.

Barclays identified the small business sector as one in which the internet could provide help, advice and perhaps build a community of interest. ClearlyBusiness.com is a web-based resource Barclays has developed providing advice and services to businesses. The site answers questions on taxation, ebanking, where to site a business, acquiring credit etc whilst services include Clearlybookkeeping (a secure bookkeeping service) and links to other resources. Such activities when done successfully like ClearlyBusiness.com build trust and hence social capital, both online and in wider society.

More widely, however, for the full potential of the internet to be realised by society and business, some informal standardisation of basic internet protocols (such as 'home page', how to search, find help etc) may be needed. This can be complicated by lack of consistency across different websites under the same brand, though there are signs that ebanks are sharpening up their act on this issue. It is possible that some standard protocols, terminology and iconography will develop across the sector over time, thus making it simpler to transfer experiences and skills from one provider to another.

### *Box: Online challenges*

[73] Yakhlef, *ibid.*

The internet has not only enabled new banking channels but also new challenges. In 2002 the UK's Consumers' Association launched 'Switch with Which'.[74] The site offers visitors comparative information about banks' current account interest rates and qualitative reports on customer care. Putting aside arguments about the fairness of Which's approach, it is only with the internet that such a service could be made widely available with interactive features and advice. It also offers a free SMS service through which customers may recommend Switch with Which to friends.

Banks are having to become more aware of the internet's power to communicate, not only providing a: "challenge to the old institutional tools of governance and decision-making, but… also… [providing] an opportunity for government and business to move off the back foot in the debate about accountability and unleash a new source of creativity and innovation."[75]

### 4.4.2.3 Increasing importance of trust

In 4.1 we saw how banks are in an ideal position to build trust and social capital. Throughout this report we see how one bank in particular has developed initiatives that address what it has identified as its social responsibilities.

Trusted figures and norms act as our compass guiding us through the sea of information. For example, as consumers we rely on brand to guide many of our purchasing decisions. Without trusted sources, we find it more difficult to distinguish fact from fiction, important information from triviality. As the philosopher, Onora O'Neil puts it:

> "How can we tell which claims and counterclaims, reports and supposed facts are trustworthy, when so much information swirls around us? It is hard to distinguish rumour from report, fact from fiction, reliable source from disinformant, truth-teller from deceiver…It is quite clear that the very technologies that spread information so easily and efficiently, are every bit as good at spreading misinformation and disinformation." (O'Neil, 2002)

Trust is harder to build and more easily lost. One of the consequences of greater choice in a technology-rich society is our ability to switch preferences time and again. If a company loses our trust, we can go elsewhere and advertising campaigns and special offers are constantly trying to encourage us to do just that. The difficulty of building and maintaining trust puts a premium on it. It has never been more important for business, particularly online.

> "Trust is more than a highly esteemed value. Along with technology and innovation, it is one of the most powerful forces driving business today. We are a society in search of Trust. The less we find it, the more precious it becomes. An organisation in which people earn one another's trust, and that commands trust from the public, has a competitive advantage. It can draw the best people, inspire consumer loyalty, reach out successfully to new markets, and provide more innovative products and services' (Ciancutti & Steding, 2000).

When banks first started providing ebanking services, there were security fears . Potential users were being given information which could lead to them putting less trust in banking online. Some example headlines. 'Millions face online shopping glitch', 'Fraud fear for online

[74] www.switchwithwhich.co.uk

[75] *Open policy: opportunities and threats in a wired world*, Miller, P., Forum for the Future, 2002

bankers', 'Safety fears for web banking' and 'Internet bank fraud probe widens'[76]. However, the scare-stories are now dealing with different issues and Barclays Director, eChannels Simon Newman says that 'our evidence suggests that customers who bank online begin to trust their bank even more than before.'

The data certainly points to customers increasing their use over time as their confidence grows. It is likely that the opportunity to see a number of accounts with details concurrently, or 'kitchen table style' enables people to better manage their money. When this is combined with aggregated accounts like Openplan from Barclays, the impact may be greater. Openplan is an integrated banking service that links a customer's current account, savings and mortgage. Customers are able to automatically sweep money to earn a higher rate of interest, avoid overdraft charges, offset credit balances against their mortgage repayments and borrow money at mortgage rates. Potentially customers can take years off their mortgage repayment term or reduce their monthly repayments.

It could be hoped that this greater confidence and trust within a bank's online environment may have wider social consequences as customers become generally more confident online and transfer skills – financial and technical – into other activities.

We should also note that a company's efforts to build trust and brand confidence are not restricted to one area. A multitude of factors are also involved, including CSR activities, corporate sponsorship, media relations, branch promotions, direct marketing and public affairs. It is in this multichannel environment that opportunities to build trust are developed and built upon.

### *Box: Barclays approach to CSR*

[76] BBC News Online 4 January, 7 July, 1 August & 23 August 2000.

In its *Social and Environmental Report 2001*, Barclays states its operating philosophy as follows:

'Our operating philosophy is 'managing for value'. The strategies we follow and the actions we take are aligned to value creation for all stakeholders. We believe that value is created and sustained for shareholders by managing customer, employee and community relationships in outstanding ways.

In order to do this we will:

> deliver a superior customer experience and offer high value products and services that consistently exceed our customers' expectations

> attract, develop and retain talented, performance-orientated people by providing employment opportunities that are among the best in the financial services industry

> play a full and active role in the communities in which we operate, to ensure mutual benefit from our success.'

Barclays acknowledges that its success depends on including the interests of all its stakeholders: customers, employees, shareholders and the wider community. This plays a fundamental part of the Barclays business philosophy of creating a 'virtuous circle' of satisfied stakeholders and taking the bank's responsibilities seriously. Barclays CSR activities cover environmental issues, financial inclusion, disability, community investment, human rights, ethics, employment policy and a commitment to promoting equality and diversity.

As a reflection of this commitment, Barclays also supports the promotion and development of the Corporate Social Responsibility (CSR) agenda, whether at the local or international level, and actively participates in the current dialogue with stakeholders at the UK and EU level on the way forward for CSR.

When looking at the social benefit of Barclays work, the challenge for the bank is to create and maximise the value of our CSR activities and their impact on stakeholders, including society as a whole. Barclays has met this challenge in different areas, examples include:

> Support for rural areas during the UK's foot and mouth crisis of early 2001 – for example within two weeks of the outbreak Barclays offered all its farming customers a three-month repayment break on outstanding loans, with interest accruing to the accounts.

> Support for deprived areas by working with credit unions and Community Development Finance Institutions (CDFIs). Credit unions promote thrift and provide affordable credit to people on low incomes and the financially excluded. CDFIs operate as a lender of last resort and provide loans to local businesses, social enterprises and individuals.

> The Barclays Cash Card account - This basic no-credit account is aimed at those who may have previously found it difficult to open a conventional account because they lacked a financial track record.

Much of this relies upon building goodwill, reputation and, possibly, social capital, though it does seem that at present, little of it is intentionally aligned or incorporated within the bank's marketing strategies.

## *4.5 Conclusion*

eBanking is but one of a number of channels available to consumers in the multichannel banking environment. In combination with the others, including branch banking, ATMs and telephone banking, it can become a powerful tool in building trust and social capital. In this way benefits may be distributed, not only directly to customers and business, but to the wider community. We have seen a number of the following throughout this study:

- Potential for increasing technological and financial confidence
- Capability to improve customers ability to manage their finances
- Ability to take banking services to members of the community who might not have previously had access to banking services
- Scope to provide vital information to small business and operate a virtual environment which can become a community of interest

Sustainable development is largely about making links between disparate factors. There are some risks associated with ebanking: digital inclusion and technological literacy are still major problems in society and, must continue to be a priority issue for banks as they should be for all business. Change is inevitable in the modern banking environment, the successful banks will be those who can adapt the older channels to bring benefits to the newer ones and yet maintain the trust of their stakeholders.

If banks are to reap the social sustainability benefits of ebanking to the full, they need to continue to search for innovative and efficient ways to integrate their CSR work into all areas of business, linking the opportunities available for training, inclusion and trust building. Seeking a socially sustainable solution to ebanking, moreover, can be seen, by and large as more of an opportunity than it is at present, offering win-win outcomes for business and society. Perhaps, in this way, ebanking can become a Trojan Horse carrying sustainable development into the heart of the retail banking sector.

# 5. Future Scenarios

Based on the sector specific insights gained from the case study, as well as on literature and internet sources, trends and future developments in the banking sector were identified. These scenarios were classified by their predictability and linked to environmental and social effects, both risks and opportunities.

## 5.1.1 Online Share of Personal Banking Slowly Rises

According to different studies, the online share of personal banking will rise in the coming years. Datamonitor expects 75 million Europeans to be doing eBanking in 2005, which would be three times today's number and would imply that 30 per cent of the population are using online banking. Estimations by Forrester Research are more progressive, expecting 110 million users in 2005.[77] However, share of eBanking differs in European countries, leaving different growth opportunities for the future.Just to compare, 12 per cent of internet users are using online banking in Italy whereas in Sweden, which is leading the European countries 54.1 per cent of internet users are banking online,.

As long as the user numbers rise slowly or even tend to plateau, no major changes in terms of material intensity will happen. This will be valid as long as the number of customers at the branches does not drop significantly. If significantly less people visit branches, the banking sector may adjust to the changed customer traffic by reducing the size and number of branches. From the social perspective, take up of internet services is slowing as the market approaches saturation levels. Increased levels of ebanking usage are likely to be from existing customers as they gain confidence in the service.

## 5.1.2 Penetration of Broadband Infrastructure Increases

Broadband connectivity can be defined as an internet connection offering at least 256 Kbps downstream and 64 Kbps upstream capacities. Today, this speed is reached by DSL[78], cable modem, satellite and powerline connections. In OECD countries, share of persons with access to broadband infrastructure doubled from the beginning of 2001 till June that year. Growth rates in European countries are projected to reach 100 per cent. Today, we also see increased competition in flat-rate, high-speed internet access. Between October 2000 and November 2001, the amount of internet homes with broadband access doubled. About six per cent of EU homes now have broadband internet access[79]. Whereas cable modems are expected to make the race in the US (51 per cent share of broadband market), for Europe a predomination of DSL is projected, with an equal 51 per cent market share.[80] Options for wireless broadband access are described in the Mobile internet section.

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[77] NFO Infratest (Germany) (2002): Monitoring Informationswirtschaft – 4. Faktenbericht 2002, p. 372.

[78] DSL (Digital Subscriber Line) is a technology for bringing high-bandwidth information over ordinary copper telephone lines.

[79] European Information Technology Observatory. (2002): European Information Technology Observatory 2002, p. 15.

[80] For this and more numbers on broadband internet access consult NFO Infratest (Germany) (2002): Monitoring Informationswirtschaft – 4. Faktenbericht 2002, p. 110-143.

In the banking sector broadband access is not likely to bear any noteworthy environmental opportunities or risks. Even though the actual online time is a decisive factor, it is mainly the customer's acceptance and trust and neither the connection's speed nor download volume which are the bottleneck for the wider penetration of online banking. This picture might however change, if further service functions (see scenario "one-stop web shops") are added.

Broadband is likely to increase usage among existing users rather than stimulate the take up of ebanking. There is certainly strong evidence that in the US broadband subscribers use the internet 61 per cent more than when they were non-DSL users and the data in Chapter 4 suggests that ebanking users tend to use the service more over time. Thus it would not be too great a stretch of the imagination to link broadband to increased confidence in and use of ebanking.

This report has identified the socially and financially excluded as possible future growth markets for banks. These groups at present, however, are least likely to be able to access broadband. Moreover, it is in rural areas, where social exclusion can be a geographic as much as financial status, that broadband penetration is at its lowest.

The risk, in perhaps five years or more, is that if non-DSL services are largely the preserve of the socially and financially excluded, some online banking services requiring high speed data transfers may become inaccessible, for example those with Voice Over IP (VOIP) services (these would enable customers to speak to a company representative via the same digital connection as the web pages).

### 5.1.3 Mobile Internet

With laptops and small handheld computers getting fast wireless network access and mobile phones expanding their computing capabilities and becoming more universal in their application ("smart-phones"), different classes of devices seem to develop towards a common future: Providing wireless, mobile, full-scale internet access. In 2000, Lucent technology claimed that "the mobile terminal will, in fact, replace the computer as the most frequently used device to go online", offering opportunities for new services and revenue creation.[81] Two years after there is still a lack of infrastructure, new devices and services, and "because of this 'chicken and egg' conundrum, the mobile internet is potentially the biggest gamble the telecommunication industry has ever taken on."[82] More so, because network providers paid enormous sums for frequency licensing, which totalled 100 billion USD on a global scale.[83] EITO states, that "throughout 2001, the market for mobile internet services remained largely untapped despite huge investments in new wireless technologies. Mobile internet-related services will grow from about € 9.8 billion in 2001 to over € 75 billion in 2006 and increase their share of the total mobile services market from 8 per cent in 2001 to 47 per cent in 2006. Traffic statistics suggest that the usage per mobile internet customer is growing, indicating a growing acceptance of mobile internet services.[84]"

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[81] Lucent Technologies (2000): Changing Times – Next Generation Mobile Data Trends, Lucent Technologies, Bell Labs Innovation, Brochure Number WPNGMTREND 05/00, p. 3.

[82] ITU (2002): Policy and Strategy trends: internet for a Mobile Generation, ITU Strategy and Policy Unit, International Telecommunication Union, p. 1.

[83] ITU (2002), p. 1.

[84] European Information Technology Observatory. (2002): European Information Technology Observatory 2002, p. 190.

Regarding end user devices, the question of convergence is widely discussed, with two camps emerging. One believes in convergence and sees the forthcoming death of pure phones and pure personal digital assistants (PDAs). The other sees smart-phones as proof of the ongoing proliferation of new device types and the trend towards users having more and more devices, sometimes with overlapping functions.[85] The view that "devices are best if they follow their primary functions"[86] competes with the vision that performing different tasks with one mobile device will offer more convenient, cheaper and easier services.

Network infrastructure relies on new standards offering broadband access to internet content. The big emerging standard is UMTS, with other standards, e.g. GPRS, competing. High connection rates via UMTS won't be reached in the introductory phase of UMTS, which might present a burden for implementation.[87] According to Gartner, opportunities in G3 include "location based services", Multimedia Messaging Service and download of music.

As with all internet applications, mobile banking relies on an ICT infrastructure that needs to be built-up, maintained and running. It appears, however, unlikely that mobile banking will have a significant impact on the infrastructure, nor are mobile applications in the banking sector expected to have significant environmental effects in the near future. First research results indicate, that mobile devices such as PDAs or mobile phones are less material intense than computers [88] [89]. Online banking via mobile devices appears, therefore, at first sight, to be beneficial when compared to banking via computer. However, most users will use mobile internet connections in combination with "stationary" ones, so that noteworthy savings are unlikely. Moreover, if mobile internet applications are seen as the next evolutionary step, it seems implausible that a large number of traditional banking consumers will leapfrog directly to mobile applications. Hence, the environmental opportunities and risk associated with mobile internet applications in the banking sector are small.

It should also be understood that common standards would be required across the European banking sector to offer secure access to mobile banking services and these standards are not yet agreed. Moreover, in South East Asia, where mobile banking services have been offered, 'so far… users in these markets remain unimpressed by the services.'[90] The social benefits of mobile access should not be over-emphasised either. Telephone banking predated online banking by several years and is as accessible via mobile as fixed-line telephony. Therefore, whilst mobile penetration is greater than PC internet penetration across Europe and could be a way of offering the wider social benefits of ebanking identified in Chapter 4, there are technological barriers (not least the screen sizes of mobile telephones and even PDAs which could make the viewing of statements difficult) which are likely to mean that ebanking via mobile telephony will not be common in Europe for several years yet.

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[85] Synchrologic: The CIO Wireless Resource Book – Information and analysis to assist with planning for wireless computing, 1-888-345-SYNC (7962), p. 19.

[86] Michael Gartenberg (2002): Conversation Trumps Convergence, August 26, 2002. [Online] Available: http://www.computerworld.com/mobiletopics/mobile/story/0,10801,73724,00.html [2002, November 19].

[87] NFO Infratest (Germany) (2002): Monitoring Informationswirtschaft – 4. Faktenbericht 2002, p. 174.

[88] see Digital Europe case study on mobile computing with HP.

[89] Federico, Antonio; Musmeci, Fabio & Mancini, Daniela Proietti. (2001). *MIPS of the Italian Mobile Telephone Network.* Paper at the Challenges of a Changing Earth Conference, Amsterdam 10-13 July, 2001.

[90] Datta, Arnab; Pasa, Mehmet; and Schnitker, Tom. (2001) 'Could mobile banking go global?' *The Mckinsey Quarterly*

### 5.1.4 Internet Access via TV

Merging internet and television technologies is a widely discussed option. Advantages include a high penetration with TV equipment and high capacities over cable connections. Prognoses go so far as to expect integrated digital TV to overtake PCs as the main gateway to the internet in Europe by 2005[91]. However, digitalisation of cable networks, receiving equipment (settop boxes) and display systems remains a crucial prerequisite, which is met with varying intensity in different European countries. Germany is lagging behind, with the biggest provider "Premiere World" never gaining real market success. In contrast, the United Kingdom and France have highly successful digital providers, which offer additional interactive content.[92] As internet access is already widespread, success will depend on the development of content combing web- and TV-typical characteristics. Woolwich launched a digital TV-based banking service that is accessible via Sky Digital Television.[93]

When comparing internet access via TV and computers, two different perspectives need to be distinguished. On a case study level (micro level), significant differences in terms of the material intensity are not expected. However, what seems to be insignificant on an individual basis is likely to be of relevance at the macro level (i.e. national/international level). Internet applications delivered via TV will open up e-markets to new sections of the population. As long as online banking substitutes the materially intense traditional banking scenario, environmental savings will be realised. Yet, as outlined in the conclusion, the likelihood of this happening is uncertain.

From the social point of view, internet access via TV could provide the scope to bridge the digital divide. In socially and financially excluded areas television has much higher penetration than PC internet access. Certainly, at a European level, digital interactive television could become the key channel for providing the benefits of online banking discussed in Chapter 4.

### 5.1.5 Multi-Channel Strategy Prevails

The end of the 20th century brought new service delivery channels: internet, mobile phones, PDAs, call-centres, digital TV and web-enabled ATMs.[94] They still co-exist with traditional banking channels relying on branches and personal contact, which were in a way rediscovered after a general slowdown of the so called New Economy. Due to their low labour-intensity, especially in online channels, this development offers opportunities to cut costs and offer additional services.

Maintaining the traditional banking infrastructure while encouraging the use of online banking leads to an overall increase in material intensity and related environmental effects. A study for the UK department for transport, local government and the regions on the impact of ICT on travel and freight mentions "the closure of branch offices and demise of travelling

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[91] Bundesministerium für Wirtschaft und Technologie [German Federal Ministry fo Economics and Technology]. (2001). Monitoring Informationswirtschaft [Monitoring Information Economics] – study by Infratest Burke GmbH & Co. and the Institute for Information Economics. Berlin: BMWi, p. 5.

[92] NFO Infratest (Germany) (2002): Monitoring Informationswirtschaft – 4. Faktenbericht 2002, p. 140.

[93] Woolwich. (2002): [Online] Available: http://www.woolwich.co.uk/ [2002, December 13].

[94] Arnfield, Robin, Arnfield, Beatrice (2001): Discover the way forward in Multi-Channel Banking - Multi-Channel Financial Services: Strategies for Optimising the Delivery Channel Mix, p. 2.

representatives in the financial service sector [95]" as one possible future development. Nevertheless, for the next three to five years, multi-channel strategy will dominate the sector.

A key driver in the proliferation of channels over the last couple of decades has been the opportunity to offer new services to customers, a marketing imperative. It seems highly unlikely, and also potentially a bad thing from a social point of view, that the number of channels will shrink. In fact, as Chapter 4 demonstrated, customers are challenging banks to rethink how they use their channels but are not becoming the users of one channel to the exclusion of the others. For example, customers increasingly wish to see an advisor in a branch to make 'big life' decisions such as acquiring a mortgage, but will withdraw cash from an ATM, check their balance by telephone and make regular mundane bill payments online. This tendency is only likely to continue.

Furthermore, ebanking as an idea is becoming more commonplace. When ebanking was first introduced its sheer novelty drew attention to it. In the media, the new entrants to the market, particularly those with an internet-only strategy (i.e. without branches and telephone banking), had to promote ebanking as something quite apart from the rest of the banking scene. In 2003, as most ebanking use is in combination with other channels, this 'difference' is diminishing. It is likely that this trend will continue into the near future until ebanking is considered commonplace and banks that don't offer the service will be considered a novelty.

### 5.1.6 One Stop Finance Web Shop

Banking customers are ready and willing to get one stop finance solutions combined with individualised offerings: Around 80 per cent welcome offerings on additional products from their bank when matched to their personal user profile. And over 70 per cent of eBanking users approve the sentence: "I want a personalised website where I put together the desired information myself".[96] Online Banking therefore offers the possibility of giving selective product information based on automatically collected and processed Customer Relationship Management (CRM) data. A technique that is practised today e.g. by Amazon, making individual offerings derived from individual user data and general buying statistics.

Being the most unpredictable of the three sector specific scenarios (5.1.5 to 5.1.6), one stop finance web shops seem to bear the largest environmental opportunities and risks of all three. These are closely linked to issues already discussed. Shifting large parts of the customer service and financial advice to the internet potentially makes parts of the banking infrastructure redundant. On the other hand, customer service and other types of advice require far longer online-times to browse and read through information, to download documents etc. The technical basis for such a development, like fast connections, is currently rolled out across Europe (see penetration of broadband increases). Whether opportunities (reduction of floor space) or rather risks (additional electricity consumption, additional ICT devices) prevail, is not predictable.

[95] Hop Associates. (2002): *The impact of Information and Communications Technologies on Travle and Freight Distribution Patterns: Reveiw and Assessment of Literature*. Final Report to the Departement for Transport, Local Government and the Regions, U.K., p. 33.

[96] NFO Infratest (Germany) (2002): Monitoring Informationswirtschaft – 4. Faktenbericht 2002, p. 372.

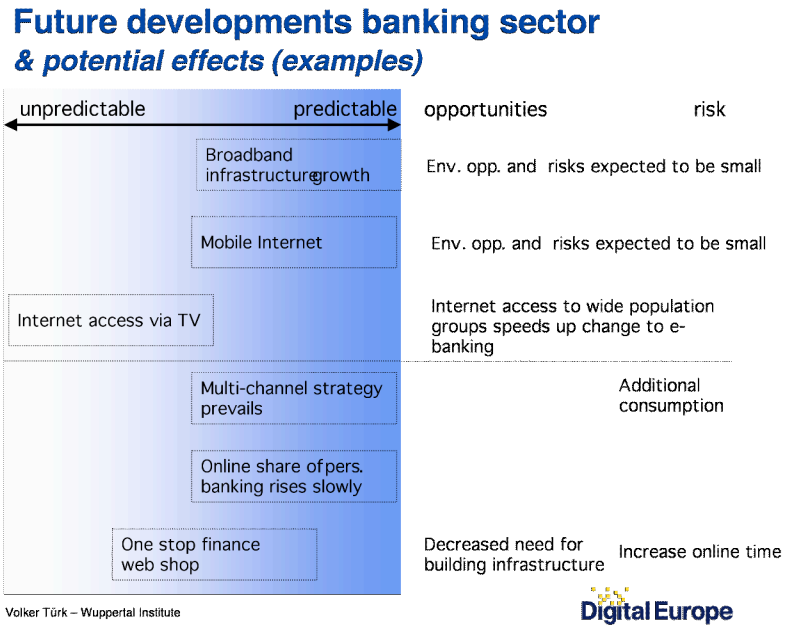


*Figure 5-1: Summarising overview on future scenarios in the banking sector and some potential effects on the environment.*

# 6. Recommendations

Based on the case study findings, and reflecting the future scenarios identified for the sector, recommendations can be given aimed at reducing the environmental effects and in particular the material intensity in the banking sector[97]. Social recommendations are aimed at promoting the social benefits associated with eBanking without exacerbating any of the drawbacks. Improvement Strategies focusing on the operational as well as the strategic level are outlined below. These recommendations are made by the research partners and do not necessarily represent the views of Barclays plc.

### *Banking infrastructure*

Analysing the two scenarios, traditional banking and online banking, from an environmental point of view revealed that **electricity consumption** is a major part of total material intensity. Focusing on the material intensity allows us with a reasonable level of confidence to deduce, that the electricity consumption or, on a more general level, the energy consumption should be a focus area in the environmental domain. Increasing the energy (electricity) efficiency can therefore be seen as an important improvement opportunity, and should have a prominent position in the environmental management system. Measures already taken by Barclays Plc. such as the "environmental awareness road show" aimed at raising employees' commitment to cut energy consumption could serve as a starting point for strengthening work on this issue. A thorough investigation could help to identify specific cost- and eco-efficient measures. A detailed analysis of improvement options would be the best way of meeting Barclays objective to reduce the consumption of energy.

A parallel strand of action could be electricity procurement. Research by the Wuppertal Institute shows, that generally speaking renewable energies are characterised by smaller material intensities and can be seen as more environmentally beneficial than non-renewable. Thus, it appears worthwhile to consider integrating criteria and incentives for a green(er), less material intensive power supply into the purchasing policy. Providing it is economically feasible, the existing environmental supply chain tools could emphasize criteria for renewable energy (electricity) in order to increase its share beyond the existing 6.9 per cent[98] of the total electricity purchased. As a complementary measure targets for continuously increasing the share of renewable could be set and reported on a regular basis.

A second focus area could be: **building infrastructure**. The material intensity analysis identified it as the second biggest contributor next to electricity consumption in both scenarios[99]. Given the fact that closing of branches, which make up about 70 per cent of the total floor-space, is very likely to have significant social implications and conflicts with a multi-channel strategy (see future scenarios), efforts could focus on facility management to minimise the existing infrastructures environmental effects. A potential reduction opportunity is the downsizing of branches. Without compromising the presence of branches at shopping areas, reducing the floor space would help to minimize the material intensity of banking. Another option that is already underway in a pilot project is the use of shared branches with

[97] As for many service sectors, the most significant environmental impacts from banking arise indirectly, a fact acknowledged by Barclays Plc. in their environmental report 2001 (Barclays 2002, p. 24). Yet, this project looked at different ways of banking (traditional vs. online), so that the recommendations only cover indirect aspects as far as they relate to the study scope.

[98] Barclays PLC. 2002. Social and environmental report 2001, p. 28.

[99] In the online banking scenario it is at the same level as the material content of the consumers PC.

other banks, offering banking services in a common commodity and potentially sharing certain infrastructure as well.

Guidelines or checklist for environmentally sound construction and renovation of buildings could be a part of the environmental management routine. Important aspects to consider are[100]:

- Insulation. Increasing the energy efficiency is one of Barclays objectives.

- Type of materials used. Environmental aspects should be part of the selection criteria for construction materials. The ecological rucksacks of materials differ widely and could be one selection criterion next to eco-labels.

- Modular construction. Landfill space is becoming increasingly scarce in Europe. Yet every year some 70 million tonnes of construction and demolition material as well as soil end up as waste in the U.K[101]. With life expectancies of several decades, buildings should be designed for disassembly. A modular construction, allowing taking apart and reusing or recycling construction materials is a resource saving strategy. Composite materials should be avoided.

- Refurbish old buildings. The need to reduce the consumption of land for construction is exemplified in the fact that land use is one of the environmental headline indicators in the U.K.[102]. Rather than constructing new buildings, old buildings should be refurbished. Where necessary, new buildings should be built on urban “brown fields" sites.

The social implications of ebanking upon the banking infrastructure are in some part similar to the environmental. There is a challenge for the sector to address the use of its infrastructure, particularly in retooling branches to reflect the changes in channel use outlined in Chapter 4 (i.e. using branches less for simple bill payment and more for face-to-face meetings) and maintaining the social role of banks as hubs within societies.

There is further potential for branches to be used to develop technological literacy in customers, offering demonstrations of ebanking services and teaching the basic technological skills required to bank online. This should be seen as an investment in customers.

### *Technology*

Unlike internet applications associated with large volumes of transferred data, the online time is the decisive factor in online banking. The longer a user is connected to the internet, the larger the material intensity. Thus user friendly, well-structured web interfaces allowing a quick and easy overview of functions can contribute to reducing the online time and hence the transfer's material intensity.

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[100] Spies-Wallbaum, Holger. (2002): *Denk- und Kommunikationsansätze zur Bewertung des nachhaltigen Bauens und Wohnens* [Pathes and Communication Approaches towards a Sustainable Construction Sector]. PhD thesis University of Hannover, Germany.

[101] U.K cabinet office. (2001): *Resource productivity: making more with less* . Performance and innovation unit, U.K. cabinet office, London, p. 19.

[102] U.K cabinet office. (2001): *Resource productivity: making more with less* . Performance and innovation unit, U.K. cabinet office, London, p. 71.

Production, usage and end-of-life of information and communication technologies are associated with significant environmental effects[103] [104] [105]. Banks can minimize these effects by purchasing energy efficient and environmentally friendly information and communication technology devices. Again, including corresponding criteria (e.g. labels) in the procurement guidelines would ensure minimization of these effects.

With regard to customers use of technology, banks are in a unique position to promote technological literacy and a greater sense of financial literacy and confidence. For a number of years they have worked through different means to encourage responsible financial management. However, there is scope for a more explicit integration of education in both financial and technical literacy. In the Information Society, we (?) cannot have a technically skilled workforce with poor numeracy and financial skills.

More specifically, we recommend that banking sector groups work with schools to address financial and technical skills together. Furthermore, we suggest that the European Union and national governments monitor levels of banking competence, and particularly ebanking competence, as key social skills requisite for a fully functioning Information Society.

In the medium to long-term, as broadband penetration across Europe increases, governments will need to ensure that there are not 'broadband black-spots' wherein the digital divide is exacerbated by non-DSL internet access (see 5.1.1). Though we expect the banking sector to remain firmly multichannel, for the sake of wider society, it is crucial that ebanking technology once made available, remains available.

As a further measure to make ebanking skills (both financial and technical) more transferable, we recommend that providers of ebanking services across the sector develop as standard certain visual protocols that build upon those already becoming embedded in web-media in general (e.g. the help function, FAQs etc many of which are already used in ebanking).

### *CSR-strategy*

**… for the company:** Comparing the contribution of different country units to a group-wide total environmental backpack could be a way to identify internal best-practice examples, in order to enhance communication between different units and to improve overall performance. Business-related travel could be another focus area. In the traditional scenario consumer transport emerges as third largest contributor to the overall material intensity. Experience with other companies shows, that business travel as well as employees commuting can be of significant relevance to a company's environmental backpack.

From the social perspective, while Barclays is doing a lot on many fronts to address financial inclusion, we believe that in the next few years there will be further scope to consider its social impacts across all its stakeholders, identifying opportunities for social benefit that have business benefits too. An example of this might be measuring the confidence of its customers in using ebanking technology and setting targets to improve it over time.

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[103] Digital Europe. (2002): *Theme report virtual dematerialisation: ebusiness and factor X* . [Online]. Available: http://www.digital-eu.org/themes/default.asp [2002, December 10].

[104] Digital Europe. (2002): *Digital Europe. Ebusiness and sustainable development. State of the Art Review* . [Online]. Available: http://www.digital-eu.org/themes/default.asp [2002, December 10].

[105] Türk, V., Ritthoff, M., Geibler, J. von & Kuhndt, M. (2002). internet: virtuell = umweltfreundlich? [internet: virtual = environmentally sound?] In: Altner, G., Mettler-von Meibom, B., Simonis, U. & Weizsäcker, E.U. von (Herausgeber), Jahrbuch Ökologie 2003. Beck, München, p. 110 - 123.

There may also be opportunities to inform all ebanking customers of Barclays CSR activities through the retail banking sites (i.e. in addition to www.society.barclays.com, the Barclays CSR website. This would have the effect of better informing key stakeholders of the company's activities.

**… for the banking sector and its employees:** Cross sectoral co-operation along the supply chain seem to be an important issue for the banking sector. This is of particular relevance in service sectors such as banking, where most of the environmental effects are indirect and consumer behaviour is a decisive factor. Co-operation and information/communication strategies seem to be a promising approach to influence the environmental effects outside direct control of banks. Hence product or service panels, representing the important actors along the supply chain as well as other relevant stakeholders, appear to be crucial in order to improve the sector's performance. Topics of potential interest are e.g. the environmental effects from ICT equipment. The banking sector is an important user of ICT equipment and online banking will further increase the dependence on ICT devices. Another area for improvements could be the environmental and social implications of investments.

For this to happen it is crucial that the sector as a whole sees opportunity and innovation as ways of addressing sustainable development in banking. Great strides have been made in developing guidelines for environmental and CSR management. We recommend that this is complemented by all members of the sector signing up to the London Principles. The London Principles of Sustainable Finance 'provide a framework for private financial institutions and policy makers to focus on where innovations are required to further improve the role of the financial system in financing sustainable development. …these principles focus on the financial sector's primary role in promoting economic prosperity as well as its influence on environmental protection and social development.'[106]

Addressing more specifically some of the banking sectors key-stakeholders:

> **… for customers:** Customer behaviour is a decisive factor for the environmental effects of banking. Going back tothe case study, the customers' largest effects originate from the trip to the bank as well as the usage of ICT devices. Trying to reduce motorised private transportation will help to cut the impacts from the trip. With respect to the ICT usage, several strands of action can be taken. Reduction of electricity consumption, by using the existing power saving options, switching off PCs when not in use etc. is the most obvious one. To minimise the environmental impacts at the end-of-life, ICT equipment should be fed into electrical and electronic waste management streams. Still, the largest impact can be made at the purchase stage. Research at the Wuppertal Institute suggests, that from a material intensity point of view the production phase is among the most important ones along the life-cycle of ICT devices. Extending the use-phase and upgrading where possible instead of investing in new equipment is one option. If necessary, environmentally advantageous devices (e.g. signalled by an eco-label) should be purchased. But consumers can do more. Integrating a bank's performance and attitude towards environmental, social and other sustainability aspects, should be a core criterion for selecting a bank.
>
> **… for shareholders:** An important aspect for shareholders is to be conscious about the fact that sustainability issues have an impact on the bottom line, even though it is

[106] Pearce, B., *Financing the future – The London Principles, the role of UK financial services in sustainable development* (London, 2002)

hard to quantify. The business case for sustainability is more complex than comparing euros spent versus euros saved. This means that investment in sustainability projects might be necessary in order to sustain the generation of shareholder value in the long term. Acknowledging this, shareholders may wish to put forward questions to the managing board, how the bank addresses these kinds of issues[107].

**… for government:** Governments need also to ensure that all retail banks play their part in building a sustainable information society. There is a danger that certain players (often internet-only providers) in the sector that select only high-value, low-maintenance customers only reap the benefits of the wider sector's work in promoting financial and technological literacy. For this reason we recommend that governments (national and at European level) encourage these certain players to look at ways they can support educational initiatives, even when they are not in a position to offer basic banking services.

Given that multi-channel strategies will prevail in the banking sector it seems likely that ebanking will actually lead to an increase in the banking sector's overall material intensity. The main environmental effects that arise are related to the energy and infrastructure requirements. Hence it can be concluded that the established policy steering instruments such as voluntary agreements, incentives and taxes are also required in the new economy. Internalisation of external effects still seems to be one of the best measures to reduce the effects on the environment. To minimise the environmental effects of the existing infrastructure, energy-efficiency programmes seem to be a core option. In addition incentives should be given to speed up the transitional process towards ebanking. For that to happen additional customer groups need to be familiarized with the technology, the security of internet transactions needs to be improved etc.

Another important aspect at the governmental level is **electricity consumption,** which proved to be of enormous importance to overall material intensity. With an increase in broadband connections and flat rate connections, this is likely to increase even further. Apart from energy efficiency measures, renewable energy sources are one important improvement option in this field. The EU is aiming to double the renewable energy share to 12 per cent by 2010. A directive passed in 2001 sets as an additional target the raising of the share of electricity consumption from renewables to 22 per cent[108]. Though Europe's renewable energy capacities continue to grow (e.g. EU now accounts for three-quarters of global wind energy generation), initiatives and activities in the sector need to be enforced in the future. Based on the existing policies a share of only eight to ten per cent renewables will be reached, according to a study for the European Commission.[109]

The elaboration of additional, comprehensive strategies concerning renewable energies at EU-level is of central importance to the development of a (more) sustainable future e-society.

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[107] One example is the carbon disclosure project. It is a group of large institutional investors with significant assets asking the 500 largest quoted companies in the world by market capitalisation for the disclosure of investment-relevant information concerning their greenhouse gas emissions.

[108] Environmental Daily – Europé´s Environmental News Service (2002). EU set to miss renewable energy goals. Issue 1253, 9 July 2002.

[109] Environmental Daily – Europé´s Environmental News Service (2002). EU set to miss renewable energy goals. Issue 1253, 9 July 2002.

These supporting strategies and the formulation of a mix of measures are indispensable to support renewable energies in order to double their share. This would not only contribute to a more sustainable energy policy, but would also contribute to reaching the goals of the Kyoto protocol. On a national level the "Renewable Energy Sources Act (Erneuerbare Energien Gesetz, EEG)", put into force in April 2001 in Germany, gave an important impetus to reaching the national and international objectives of increasing the share of renewables. Central point of the Act is the regulation of purchasing and remuneration for power produced from renewable energies by energy supply companies that operate nets for public supply.[110] Measures like these should be promoted on a European level.

In addition the public sector should help to develop an understanding of the rebound effects through the allocation of research resources. The fact that rebound effects, i.e. unintended negative consequences that accompany a change, are likely to influence the results, has been pointed out several times. Rebound effects are a result of changes in (consumer) habits, which is why they are so difficult to quantify. While in the case of online banking it appears not to be very likely that the inclusion of rebound effects will change the results dramatically, it cannot be assumed that this is the case for the ebusiness sector in general. Research in this area is urgently needed to help understand these effects.

Moreover, further research is needed to identify whether these rebound effects can be traded off one another so that where social and environmental benefits may not be aligned, sustainable decisions can be taken.

[110] Bleischwitz, R., Hennike, P. et al. (2002) Review of Eco-Efficiency Concepts in Euroe, Towards an Application of European-based Policies on Material Flow and Energy to Japanese Sustainable Develpment Policies, Wuppertal Institute for Climate, Environment and Energy, Final Report January 2002, p. 23.

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# Glossary

| | |
|---|---|
| BB | Barclays Plc |
| CCH | Central Clearing House |
| CRM | Customer Relationship Management |
| ICT | Information and Communication Technology |
| IT | Information Technology |
| LCA | Life-Cycle Analysis |
| MIPS | Material Input Per unit Service |
| OECD | Organisation for Economic Cooperation and Development |
| PDA | Personal Digital Assistants |
| TMR | Total Material Requirement - the sum of abiotic and biotic raw materials + soil movements. TMR is a statistical figure which is used to characterise the resource consumption. |